CRANFIELD UNIVERSITY

HEND S. H. HASSAN

AN INVESTIGATION OF E-SERVICES IN DEVELOPING COUNTRIES: THE CASE OF E-GOVERNMENT IN EGYPT

SCHOOL OF APPLIED SCIENCES

PhD THESIS
Academic Year: 2007 - 2011

Supervisors: Dr. Essam Shehab and Professor Joe Peppard
July 2011

CRANFIELD UNIVERSITY

SCHOOL OF APPLIED SCIENCES

PhD THESIS

Academic Year 2007 - 2011

HEND S. H. HASSAN

AN INVESTIGATION OF E-SERVICES IN DEVELOPING COUNTRIES: THE CASE OF E-GOVERNMENT IN EGYPT

Supervisors: Dr. Essam Shehab and Professor Joe Peppard

July 2011

This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

ABSTRACT

Many developing countries' governments have invested heavily in e-service projects. However, there is a lack of clear case material research, which describes the potentialities experienced by governmental organisations. This research examines e-government service projects and provides insights and learning into how to successfully develop and implement these projects within a developing country, specifically Egypt. The aim of this research is to develop a robust framework to support an efficient e-government system focusing on the case of Egypt. This is achieved by investigating selected completed and on-going successful initiatives and focusing on the barriers to, and the enablers of, these initiatives. As a result, the nature of successful e-governmental services initiatives is determined, and solutions to the possible emerging barriers and challenges are developed. Many lessons are learned to be taken into consideration in repeating the successful experience of other new e-service projects in the Egyptian government. A combination of research methodology approaches has been employed in this research. Firstly, an extensive review of literature took place to summarise and synthesise the arguments of the main factors contributing to the development of e-service research. Secondly, the qualitative approach and the case study are selected as an appropriate methodology for this research, using the semi-structured interview technique to gather data from top level officials who are involved in the Egyptian e-government program. Based on evidence, the cultural barriers group is the main group facing Egyptian e-government progress. On the other hand, the political will and enforcing decisions are the ultimate driving forces for the successful implementation of e-service projects in particular and the e-government program in Egypt in general. Based on the findings, a framework is developed for explaining the main barriers and enablers of government e-service projects development, and providing solutions for the identified barriers, especially in a developing country environment like Egypt. Also, a process, of e-service projects implementation is proposed. A new enabler (decision enforcement) is found in the Egyptian government context and added to the list of enablers. From a practical point of view, this research provides realistic implications for the decision makers and officials within the Egyptian government involved in the process of planning, developing and implementing e-service projects.

Keywords: Developing Countries, E-government Program, Egyptian Government, E-service, Government to Citizens Projects

ACKNOWLEDGEMENTS

In the course of my PhD research, I have benefited greatly from the support, advice and help from many people.

First and foremost, I would like to thank my supervisors, Dr. Essam Shehab and Professor Joe Peppard. Their focus on high quality research provided me with a standard for which I will continue to strive. I am indebted to them for their support, guidance, and inspirational enthusiasm throughout the duration of this research. I am also grateful to my review panel, Dr Benny Tjahjono and Mr Andrew Mills, for their useful feedback in my reviews.

I would also like to thank all people who offered their valuable time to participate in the interviews as a part of this research. Special thanks are for his Excellency Dr. Ahmed Darwish, the former Minister of State for Administrative Development, and the Deputy Minster Dr. Ashraf Abd-Elwahab. Also many thanks to Dr. Mohamed Abd-Elkhalik for his great help in collecting initial data at the beginning of this research.

A lot of gratitude goes to the academic staff of the Manufacturing Department, Decision Engineering Centre. In particular, Professor Rajkumar Roy, Dr. Ahmed Al-Ashaab, I am also grateful to my friends and colleagues Nancy, Taghrid, Johannes, Jeevan, Fran, Lena, João, Yoseph, and Mohamed. I cannot adequately express my appreciation to them. I am so grateful of being a part of their social communities.

I am particularly grateful to my beloved husband Ahmed for his unconditional support and encouragement. You told me that good things come to those who wait. Apparently you were right, as always! Thank you for all those times you stood by me. I would like to thank my beloved son Yassin for all the joy he brought to my life and for cheering me up when I was down. There are not enough words to express my love for you.

I owe great deal of gratitude to my mother. I could not have done it without your prayers! Thank you my sister Ghada for always being there for me. Finally, I dedicate this thesis to my beloved late father, Professor Sameh Hafez Hassan who has been and always will be my role model.

LIST OF PUBLICATIONS

Journal papers:

1. Hassan, H., Shehab, E. and Peppard, J. (2011), "Recent Advances in E-Service in the Public Sector: State of-the-Art and Future Trends", Business Process Management Journal, vol. 17, no. 3, pp. 526-545

2. Hassan, H., Shehab, E. and Peppard, J. (2011), "A Framework for E-Service Implementation in the Developing Countries", International Journal of Customer Relationship Marketing and Management, vol. 2, no. 1, pp. 52-65.

3. Hassan, H., Abd-el-Kader, A. M. (2011), “Egyptian Electronic Government: The Citizen Relationship Management (CRM) Case Study”, International Journal of Customer Relationship Marketing and Management, in press.

4. Hassan, H., Shehab, E. and Peppard, J. (2011), “Development of Egyptian E-Government: the E-service Projects Case Studies”, Special Issue of The Data Base for Advances in Information Systems: on Moving towards Maturity: Challenges to Successful E-government Implementation and Diffusion, Submitted

Conference papers:

1. Hassan, H., Shehab, E. and Peppard, J. (2010), "Egyptian Electronic Government: The University Enrolment Case Study", International Conference on Engineering and Technology Management, Vol. 71, 24-26 November, Venice, Italy, World Academy of Science, Engineering and Technology, pp. 373-377.

2. Hassan, H., Shehab, E. and Peppard, J. (2010), "Toward Full Public E-Service Environment in Developing Countries", International Conference on E-Commerce, E-Business and E-Service, Vol. 66, 28-30 June, Paris, France, World Academy of Science, Engineering and Technology, pp. 618-622.

3. Hassan, H., Shehab, E. and Peppard, J. (2008), "Adoption of E-Service in Developing Countries: Issues and Challenges", Cranfield Multi-Strand Conference (CMC); Creating Wealth Through Research and Innovation, 6-7 May, Cranfield, UK, Cranfield University Press, Cranfield, UK, pp. 454-459.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

CEO	Chief Executive Officer
CPI	Corruption Perception Index
CRM	Citizen Relationship Management
CSFs	Critical Success Factors
DT	Distributed Team
DTU	Database Technical Unit
EGP	Egyptian Pound
EISI	The Egyptian Information Society Initiative
ERP	Enterprise Resource Planning
FPTF	Family Project Task Force
G2B	Government to Business
G2C	Government to Citizen
G2E	Government to Employee
G2G	Government to Government
ICT	Information and Communication Technology
IDSC	Information and Decision Support Centre
IS	Information Systems
IT	Information Technology
ITIDA	Information Technology Industry Development Agency
JIC	Judicial Information Centre
KPI	Key Performance Indicator
MCIT	Ministry of Communication and Information Technology
MoE	Ministry of Education
MoHE	Ministry of Higher Education
MoJ	Ministry of Justice
MSAD	Ministry of State for Administrative Development
MSS	Ministry of Social Solidarity
NGO	Non Governmental Organisation
PIL	Partner in Learning Program
PMG	Project Management Group
POS	Point of Sale
Root CA	Root Certificate Authority
SJC	Supreme Judicial Council
SME	Small and Medium Enterprise
SMS	Short Message Service
SOA	Service Oriented Architecture
UECO	University Enrolment Co-ordination Office
UN	United Nations
UNPSA	United Nations Public Service Award

1 CHAPTER ONE: INTRODUCTION

1.1 Research Background

The government service portfolio is complex and diverse, involving social services, national infrastructure, entitlements, regulation, science, environment, and research and development. Successful diffusion of Information and Communication Technologies (ICTs) has encouraged the use of Internet, e-commerce, and eventually e-government. As a result, ICT has become a growing segment of the governmental budget and a substantial driver in improving government performance, enhancing transparency and providing better service delivery along with simplicity in the relationship between the government and both citizens and businesses (Heeks and Bailur, 2007; Steyaert, 2002).

Hence, government agencies are today challenged with developing an IT enterprise architecture that links electronic services to the agencies' mission. They face growing pressure to serve citizens electronically and demonstrate value to the public in terms of effectiveness, cost and efficiency. As a result, e-government has been acknowledged as one of the main initiatives for governments across the world (Chen et al., 2006).

However, successful development and implementation of e-government initiatives is a challenging issue. There are factors that affect the transition to e-government starting from the planning phase to the actual implementation. Some of the factors are enablers that must be taken into account to ensure the efficiency and effectiveness of e-government, and other factors are barriers that should be avoided, or problems that should be solved. For governments to experience effectively the e-government process and avoid high cost failures, they have to overcome those barriers and emphasise the enablers.

The purpose of this chapter is to outline the research fundamentals. This includes introducing the research background and positioning the research in its

context (the e-government in Egypt as one of the developing countries). A brief comparison between the e-government development efforts in developed and developing countries is presented. Next a background on the e-government initiative in Egypt is provided. Later, the research motivations and significance are discussed, the research question, aim and objective are addressed, and an overview of the thesis chapters is presented. An outline of Chapter 1 is presented in Figure 1.1.

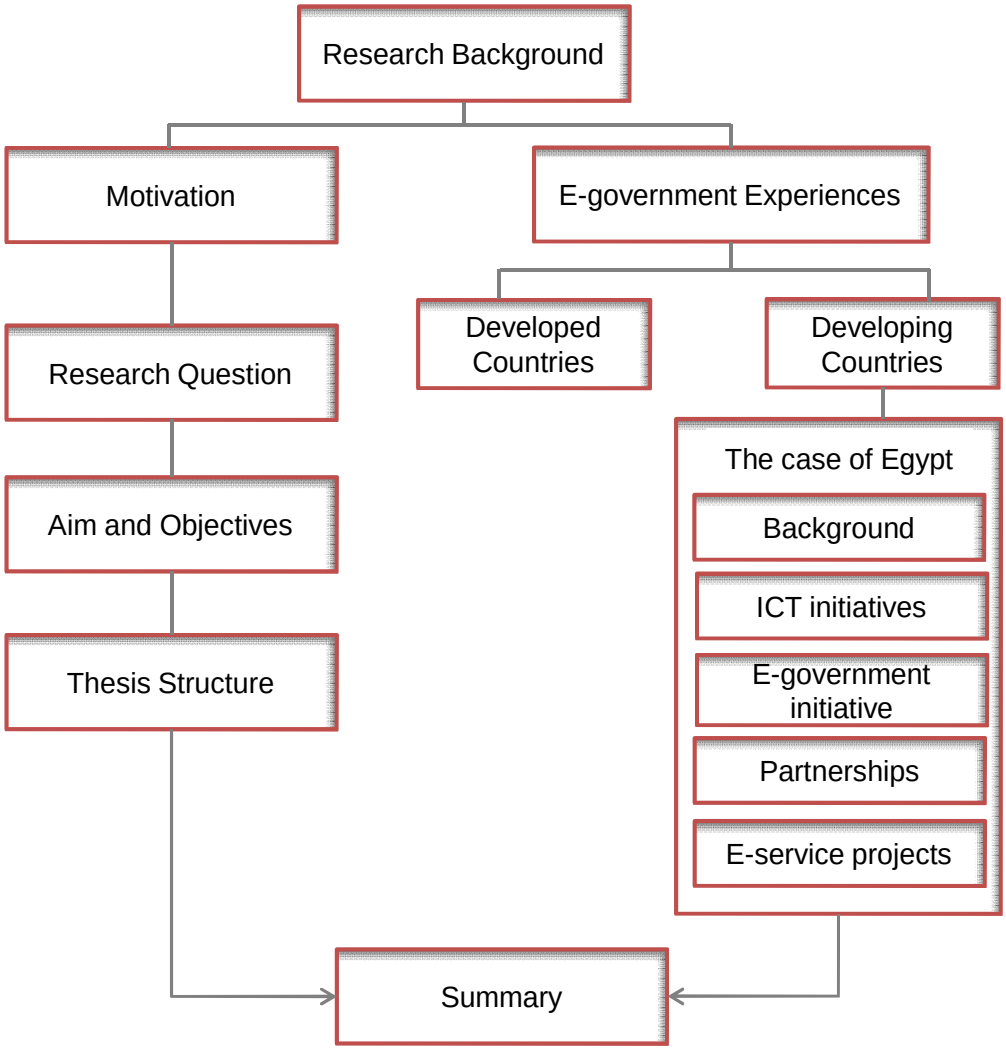


Figure 1.1: Outline of Chapter 1

1.2 E- Government Experiences

Along with the global diffusion of the Internet, e-government is actively being deployed throughout the world, as evidenced by the fact that nearly all countries have developed government websites by 2010 (United Nations, 2010). Advanced nations as well as developing countries are seeking best practices solutions to build effective systems.

With the help of e-government applications, government organisations increase their productivity, gain a competitive advantage and reduce the gap between the different government agencies and local authorities (Deakins et al., 2010; Norris and Moon, 2005; Eyob, 2004; Whitson and Davis, 2001). However, there are differences in the adoption and implementation of e-government within several government organisations at a national and international level (Heeks, 2002b; Moon, 2002). These differences can be attributed to the individual organisational requirements, circumstances, readiness, structure, size and cultures (Lam, 2005).

This section describes the e-government experiences of several governments. It begins by presenting experiences from both developed and developing countries, and then it moves to the e-government initiative in Egypt.

1.2.1 E- government: Developing Versus Developed Countries

Although e-government technologies have the potential to improve the lives of the world's population, particularly those who live in developing countries, the developed countries such as the U.S., Canada, UK, Australia, Norway and Germany have so far been the leaders in e-government (Accenture, 2010), reaping the vast majority of initial gains of e-government implementation. The developed countries continue to launch multi-year programs to create more citizen-centred, effective and efficient governments using web technology (Chan et al., 2010).

Actually, the gap between developed and developing countries in Internet technological infrastructures, practices and usage has been wider rather than

narrower over years (Chen et al., 2006). Besides the lack of sufficient capital to build up an expensive national information infrastructure on which e-government is based, developing countries also lack sufficient knowledge and skill to develop suitable and effective strategies for establishing and promoting e-government.

Every year, the UN releases a report on the developing countries and compares their economic conditions in several different categories. These countries were chosen based on their low GDP per capita, their weak human assets and their high degree of economic vulnerability (Chen et al., 2006). According to its latest release (United Nations, 2010), it is found that many developing countries have been investing in streamlining their national and ministry portals and websites to offer more e-services and more actively engage citizens in dialogues with government. Also, the digital divide between the developed countries and developing countries is gradually closing in the e-government arena.

Middle-income developing countries in particular have made significant advances, to the point where a number of them have usurped positions held in the past by high-income countries in the UN e-government development index (United Nations, 2010). This has occurred despite the relative advantage enjoyed by developed regions in telecommunications infrastructure, which accounts for a third of a country's index value. This may be explained by a combination of government leaders who understand the potential of ICT, a willingness to invest and comprehensive e-government policies designed with all segments of society in mind.

Many of these countries have revamped their national and ministry websites as tightly integrated portals providing citizens with a single point of entry to all e-government services. By contrast, e-government development remains a distant hope for many of the low-income developing countries due to the cost of technology, lack of infrastructure, limited human capital and a weak private sector. Small ad hoc and stand-alone projects are the norm in these countries, and often lack a well-thought-out e-strategy within their national development

plans. Once initial funding for these projects ends, they are usually at high risk of simply shutting down.

Despite technological progress, the lack of ICT professionals (i.e. human capital) remains a major shortcoming in both middle- and low-income countries. Developing country governments often find themselves in the position of having to hire expatriate management consultants and other information technology professionals to develop domestic e-government services (Hassan et al., 2011b).

Developing countries face the challenge of ‘catching- up’ to developed countries when it comes to investing in e-government. The concerns of developing countries in respect to e-government lie less in any natural barriers to the diffusion of e-government and more on the side of human resources and their disposition, i.e. their ‘capabilities’ in policy-making, technology and consumption (Guida and Crow, 2009).

Table 1.1 summarises differences between developed and developing countries in various aspects of e-government as adopted from Chen et al. (2006). They make this comparison on the basis of five main factors: History and Culture, Technical staff, Infrastructure, Citizens, and Government Officers. They conclude that, although most e-government strategies and implementation plans in developing countries have been based on theories and experiences of developed countries, due to these substantial differences, these strategies and experiences from developed countries may not be directly applicable to developing countries. That is why e-government projects in developing countries are either never implemented or abandoned immediately after implementation, or fail partially in terms of falling short of major goals, causing significant undesirable outcomes, or both.

Table 1.1: Differences between Developed and Developing countries

	Developed Countries	Developing Countries
History and Culture	•Government and economy developed early, immediately after independence •Economy growing at a constant rate, productivity increasing, high standard of living •Relatively long history of democracy and more transparent government policy and rule	•Government usually not specifically defined; economy not increasing in productivity •Economy not growing or increasing productivity; low standard of living •Relatively short history of democracy and less transparent government policy and rule
Technical Staff	•Have skilled staff, need to increase technical abilities and hire younger professionals •Have outsourcing abilities and financial resources to outsource; current staff would be able to define requirements for development	•Do not have skilled staff, or have very limited in-house staff •Do not have local outsourcing abilities and rarely have the financial ability to outsource; current staff may be unable to define specific requirements
Infrastructure	•Good current infrastructure •High Internet access for employees and citizens	•Bad current infrastructure •Low Internet access for employees and citizens
Citizens	•High Internet access and computer literacy; still has digital divide and privacy issues •Relatively more experienced in democratic system and more actively participate in governmental policy-making process	•Low Internet access and citizens are reluctant to trust online services; few citizens know how to operate computers •Relatively less experienced in democratic system and less active participation in governmental policy-making process
Government Officers	•Decent computer literacy and dedication of resources; many do not regard e-government as a high priority	•Low computer literacy and dedication of resources; many do not regard e-government as a high priority due to lack of knowledge on the issue

1.3 E-government in Egypt

In order to understand the key factors that affect e-government development in Egypt, it is useful to provide a description of the Egyptian approach to e-government. This description will begin with a brief history of the country's background, and then focus on the e-government program background, the ICT initiatives within the Egyptian government and its partnership with international corporations.

1.3.1 Background of Egypt

Egypt is a country mainly in North Africa, with a part in Southwest Asia. Egypt is thus a transcontinental country, and a major power in Africa, the Mediterranean region and the Islamic world. Egypt is one of the most populous countries in Africa and the Middle East. The great majority of its estimated 80 million people (CAPMAS, 2010) live near the banks of the Nile River, in an area of about 40,000 square kilometres (15,000 sq miles). The large areas of the Sahara Desert are sparsely inhabited. About half of Egypt's residents live in urban areas, with most spread across the densely populated centres of greater Cairo, Alexandria and other major cities in the Nile Delta.

Egypt possesses one of the most developing and diversified economies in the Middle East, with sectors such as tourism, agriculture, industry and service at almost equal production levels. The Egyptian economy is rapidly developing, due in part to legislation aimed at luring investments, coupled with both internal and political stability, along with recent trade and market liberalisation. Economic conditions have started to improve considerably after a period of stagnation from the adoption of more liberal economic policies by the Government, as well as increased revenues from tourism and a booming stock market. In its annual report, the IMF has rated Egypt as one of the top countries in the world undertaking economic reforms (IMF, 2010). The report also indicated that Egypt's economy is elastic to the economic crises. Sustained and wide-ranging reforms since 2004 have reduced fiscal, monetary, and external vulnerabilities, and improved the investment climate. These reforms have

bolstered the economy's durability and provided breathing space for appropriate policy responses.

1.3.2 ICT Initiatives and government reform

The Government of Egypt realises that the development of a strong ICT sector is its key to fostering local competitiveness in the global arena. The ICT sector has expanded, operating with companies such as Microsoft, Oracle and other major corporations, as well as many small and medium enterprises. The sector has been stimulated by new Egyptian entrepreneurs with Government encouragement. To back up the sector, the government established the Ministry of Communication and Information Technology (MCIT) in October 1999. Empowered by strong executive privileges, the Ministry had two mandates. The first was to convert Egypt into an information society, and the second to create a vibrant and exportable ICT industry. Upon establishment, the Ministry laid down the national plan for ICT, which focused mainly around defining a clear road map for Egypt to integrate smoothly in the global economy (MCIT, 2004). The Egyptian government also has been aiming to take the lead in "Arabizing" software for the Middle East region as part of their National Plan for Telecom and Information (United Nations, 2004). MCIT played an essential role in implementing this national plan and also in achieving its own goal of creating a robust IT industry in Egypt. To accomplish this, the Ministry provided skills training, quality control and job opportunities for companies and individuals.

This Egyptian Information Society Initiative (EISI) was a major milestone for Egypt to bridge the digital divide and to convert to an Information Society. With the new Cabinet announced in Egypt in July 2004, a confirmation and commitment of Egypt to capitalise on the evolution of ICT for the purpose of government services and processes improvements were re-enhanced (Darwish, 2008).

1.3.3 E-government Initiative

Egypt has taken the e-government initiative, since the introduction of MCIT in 1999, as part of its plan to turn Egypt into an information-based society (Azab et al., 2009). Egypt's commitment to utilising technology for the purpose of economic and social progress was further realised when the Egyptian government announced an effective e-government program that integrates ICT technologies to deliver government services at citizens' convenience (MCIT, 2004). The program officially started in July 2001 but had been planned since October 2000.

The vision of the e-government initiative in Egypt is "delivering high quality government services to the public in the format that suits them". Such vision relies mainly on three principles (MCIT, 2004) that include:

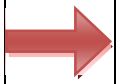
1) Citizen-centric service delivery: The program slogan is "*government now delivers*" which reflects the government's intention to develop a one-stop shop e-services approach focused on citizens' needs.

2) Community participation: The EISI Government program is a project with nationwide impact, thus community participation is a must. Citizens' demands are constantly being analysed and reflected upon, and private/public sector companies are active participants in the project's implementation and management.

3) Efficient allocation of government resources: The project proposes techniques for increasing the level of efficiency of the Egyptian Government. Productivity, cost reduction, and efficient allocation of resources are among the major expected outcomes from project implementation.

Table 1.2 summarises the Egyptian e-government's objectives, challenges and components as declared as the beginning of the initiative (MCIT, 2004).

Table 1.2: Summary of the Egyptian Information Society Initiative

Objectives		Challenges		Projects	Components
Enhancing Egyptian government readiness to accept a strong local program and to smoothly integrate in the global community.		Legal and regulatory challenges: - Remote authentication mechanism. - Security and privacy issues. Technological challenges: - Lack of unified standards. - Multiple service providers. - Isolated communication islands of government bodies. Culture and economic challenges: - Poor penetration of credit cards. - Non-existence of suitable e-payment method.		Basic Infrastructure e Project	E-signature and Public Key Infrastructure: - Document of standards. - Government gateway. - Government communication network. - Simple but comprehensive e-payment framework.
Providing timely, customised and quality measured government services to citizens and investors through convenient delivery channels.		Reputation of quality of services: - Inconvenience of delivery mechanisms. - Overlap among service providers. - Computer illiteracy and low PC and Internet penetration.		Service Delivery Project	Re-engineering services and availing them through the Networks (Internet, Telephone and Mobile): - Establishing service centres everywhere (postal offices, IT clubs, and tele-centres.). - Establishing programs to distribute PCs for homes and SMEs.
Increasing efficiency and reducing expenditure.		Reluctance to use and mistrust of automation: - Inflexibility to modify workflows (incorrectly thinking it is illegal). - Multiple auditing bodies. - Overlapping authority among government bodies. - Adopting new philosophies and practices of modern management.		Back office Automation Project	EISI-Government ERP (Enterprise Resource Planning): - Document management and electronic archiving. - Business process automation.
Providing accurate and updated information to serve investors and to support the decision making process.		Reluctance of information sharing among government bodies: - Security and privacy issues. - Ownership and copyright issues. - Lack of unified data dictionary and definitions.		Economic Databases and Decision Support Project	Creation and update of databases: - Drafting standards and laws for information sharing, copyright, and ownership.

The official inauguration of the Egyptian e-Government portal (www.egypt.gov.eg) took place on 25 January 2004, which was a major first step in coordinating and integrating government information and services. Available in both Arabic and English, the user-friendly portal targeted citizens, foreigners and businesses alike (United Nations, 2004). The target was making the beneficiaries feel a positive change by facilitating the services provided to them. The portal tailored government services to meet citizens' and investors' needs and expectations. The portal also introduced the citizen relationship management culture (CRM) to the government, where citizens are being viewed as customers and government organisations are constantly seeking their satisfaction. Investors came out as the main beneficiaries from that project; government services along various stages, including start-up and operation, are being re-engineered to condense them in a single step and avail them through the e-government gateway (MCIT, 2004).

In 2001 and 2002, the e-government program depended on the pilot approach in which some areas were identified to demonstrate the concept quickly. The approach served its purpose well for the first two years where several pilots were implemented and their success and problems thoroughly assessed. Among the services that were placed in the portal as pilots were telephone e-billing and birth certificate issuing (Microsoft Egypt Press, 2004). The telephone e-billing project, launched in October 2001 was the first e-service pilot. Telecom Egypt (the national telephone service provider) offered online invoice query and payment via credit cards. The pilot proved to be very successful and that was reflected in the high query rate which topped 100,000 per month. Although payment online is still 5% of query transactions, it is considered a notable figure, given that credit card penetration in Egypt is still low and culture awareness of e-services is still in its infancy.

Although at first the Egyptian e-government portal was not well integrated with, or promoted at, other Egyptian government sites, it is impressive that Egypt has reached such a stage of e-government maturity.

In 2004, the Ministry of State for Administrative Development (MSAD) became the organisation responsible for the e-Government program in Egypt. The MSAD perceives Information and Communication Technology (ICT) as a strategic tool that could be used in implementing the National Development Program, which seeks to raise the efficiency of the State's administrative bodies, and deliver governmental services to citizens at a fast pace in an environment that is highly efficient and effective through various interactive service channels at their convenience (MSAD, 2010). Therefore, the Ministry now develops and implements a number of projects that achieve this vision through a system of integrated management for the modernisation of the Egyptian Government.

The first services offered through Egypt's gateway were electricity and telephone billing, and payment of traffic fines. MSAD moved in many areas for speedy implementation and launch of this strategic project. This has included setting up the required infrastructure, i.e. laws and regulations, technological frameworks, government website, rules and specifications. This axis includes issuance of four documents concerning government networks, security systems, safety and document handling systems. This is in addition to putting licence contracts for personal computer programs into effect in cooperation with Microsoft. The other axis includes services such as electronic payment of telephone and electricity invoices and the like. The third axis focuses on the mechanisation of ministries' Cabinets and affiliated authorities. Contracts have been concluded for the implementation of related applications on resource planning and management, including inventory, purchases, budget accounts, and personnel affairs. MSAD has made great strides in the implementation of e-government. Similar strides to overcome some barriers are needed so that Egyptian society can benefit from the services offered by the project.

MSAD also included a special track for the automation of local governorates in the e-government project. This track aimed at simplifying procedures for local government bodies and establishing backend systems to support the online delivery of governorates' services. Through this project, rural area residents will

not have to go to service providers in the capital or the big cities and waste time and money.

Egypt's e-government program has identified a number of objectives to realise a successful implementation of e-government (MCIT, 2004; Azab et al., 2009) including:

1) Delivering services to the public where they are, in the format that suits them, at the right time and allowing them to share in the decision making process.

2) Creating an environment conducive to investors by streamlining procedures, easing access to government services and providing one-stop shopping for essential business services, thus encouraging foreign and local investment.

3) Providing accurate and updated information to support the decision making process, and to help in planning and following up on the different long-term development initiatives.

4) Deploying new philosophies and practices of modern management in the government in a mode that will make government operations more efficient and cost effective.

5) Reducing government expenditure by introducing new models for procurement, and Enterprise Resource Planning (ERP).

6) Fostering local competitiveness and increasing globalisation readiness to ensure the smooth integration of the Egyptian government in the global community, both regionally and internationally.

Egypt's e-government program is in continuous progress (Azab et al., 2009). This can be deduced by monitoring its rank in UN reports conducted regularly to evaluate e-government programs worldwide.

For example, in the UN e-government Global survey (2003a), the Egypt e-government readiness index was 0.238 compared to the global index of 0.246, ranking 140th over 173 countries. The report referred to Egypt as one of the

countries where the commitment to an effective and efficient e-government program is a priority, despite ongoing infrastructure and human capital limitations.

Egypt's e-government readiness index increased to 0.2653 in (2004), and increased again in (2005) to 0.3793, which was posted as one of the greatest advances among all countries of the world in 2005, leading the North African region, and ranking 99th compared to 136th in 2004.

In 2008, Egypt continued to lead the North African region and continued to move up the rankings with an e-government readiness index of 0.4767, moving to 79th in the 2008 Survey. Egypt also scored highly in the web measure index (0.6054), ranking 28th globally (United Nations, 2008).

It is also expected that citizens will rely more on online services due to the growing number of Internet users (increased from 300,000 in October 1999 to 23.06 million in October 2010) with a penetration of 29.6%, fixed telephone lines (increased from 4.9 million in October 1999 to 14.49 million in October 2010), and mobile users (increased from 584 thousands in October 1999 to 65.49 million in October 2010) with a mobile penetration of 84.07% (MCIT, 2010).

1.3.4 The Egyptian government partnership with Microsoft

The e-government project is considered to be one of the strategic projects for building an information base in Egypt. It would also pave the way for an informatics-based Egyptian society that would be able to cope with the IT revolution and narrow the digital gap between Egypt and the advanced world. As part of its national campaign to adopt IT in all government agencies and education, the Egyptian government partnered with Microsoft to provide the latest technology and technical support to its citizens and Microsoft became in charge of the e-government implementation and the government gateway. As mentioned before, the launch of the system for the secure e-government transactions was in 2004, and was attended by Bill Gates, Chairman and CEO of the Microsoft Corporation. During his first visit to Egypt, he pledged support

to all Egyptian national projects in order to bridge the digital divide (Microsoft Egypt Press, 2004).

Under this partnership, the Egyptian government pays Microsoft so it can get all Microsoft licences (Windows, Office, etc., plus Microsoft servers' tools and enterprise technologies such as databases, middle care engines, etc.), to be used in all governmental agencies and ministries, so that the government is 100% legalised with regard to the licence issue. In return, Microsoft provides a re-investment model to the government. This means that a certain percentage of the funds Microsoft receives from the government are funded back to the government in the form of projects. So Microsoft plays its role as the delivery arm of the government. The selection of these projects is mainly decided by the government (it assigns projects for Microsoft to carry out) and sometimes Microsoft suggest some projects to be implemented and the government has the right to decide whether or not to approve them. These projects are 100% funded by Microsoft and implemented by Egyptian companies working in the ICT field.

The most important projects Microsoft is currently funding are:

1- The Egyptian government gateway: Egypt.gov.eg
2- Providing advanced portals to different government ministries, e.g.: Ministry of Health, Ministry of Manpower and Immigration, Ministry of Finance, and Ministry of Foreign Affairs. They are provided with portals with the highest professional level.
3- Providing specialised portals, e.g. Egyptian Business Portal, Egyptian Investment Portal, and the Tourism Portal. The specialised portals and ministries' portals are provided to specific agencies and not centralised like the government gateway.
4- Electronic service provision to citizens, businesses and foreigners, either on the central gateway or on ministries' portals and specialised portals.
5- Automation for government department internal processes. The most famous operation in this category is municipalities' automation.

6- Infrastructure projects, such as initiating e-mails for employees in governmental organisations, Windows servers, firewalls for Internet access and the like.
7- Support for all the above projects. This is called premier support for the government so that it can operate and run the accomplished projects in the long term. Premier support is the highest support Microsoft can offer to any client.

Egypt was the first country to adopt this model with Microsoft, and it is repeated in many other countries now all over the world. But every country decides what they need exactly from Microsoft and their requirement projects. Some countries stress citizenship activities, some stress activities related to education, other stress NGOs and civil society organisations' activities. Microsoft then transfers its experiences from country to country. Some countries decide to fund the projects and assign other tasks to Microsoft, such as creating competency centres or conducting training programs for government employees.

Following the general partnership with the government, the Ministries of Education (MoE) and Higher Education (MoHE) signed agreements with Microsoft to acquire the latest desktop technologies for all Egyptian schools and universities. The MoE and Microsoft also signed a memorandum of understanding for the Partner in Learning (PIL) program to provide and support various innovative projects such as the Smart and Productive Schools Project that develops and enhances the education process in Egypt. As part of this agreement, MoE and Microsoft launched several new initiatives and projects to improve the speed and quality of education services. The new initiatives include the establishment of the Middle East Schools Technology Innovation Centre, IT Academies and the Junior Developer Project. Also, Microsoft partnered with the MCIT and MoE to provide the latest desktop technologies to students at nominal prices.

In addition, Microsoft has launched various training programs in cooperation with MCIT to various governmental and non-governmental agencies to provide

training and support for companies and individuals. The goal is to create a strong IT industry in Egypt and to support local independent software vendors and developers. The training offered is the same as that which all Microsoft employees receive. Furthermore, Microsoft provides opportunities, through its own projects and partners, for Egyptian companies to gain experience in the global market.

1.3.5 E-service projects

As previously discussed, successful development and implementation of e-government initiatives is challenging. To avoid high cost failures, governments have to overcome or emphasise certain factors (Dada, 2006). For this reason, this research attempts to investigate four e-government projects developed and implemented in the Egyptian government, for the purpose of identifying those factors that both hinder and facilitate the successful development and implementation of such projects.

However, e-government projects involve a wide range of services, products, people and procedures. The scope of the e-government projects examined in this research is carefully identified to avoid any complexity in the analysis and to enhance generalisability of results for projects of the same scope. The projects in this research are particularly chosen on the basis of the type of beneficiary service. Only projects that involve external interaction and cooperation between government and individuals (not organisations) are selected. Those projects provide government to citizens' e-services (G2C projects) to offer satisfactory benefits in order to improve government-citizen relationships.

Other projects offering services to organisations are excluded from this research scope, either those projects that involve external interaction with the government such as businesses (G2B projects), or those involving internal interaction and collaboration with other government organisations (G2G projects). Also, the e-government projects based on internal interaction and cooperation between governments and their employees (G2E) are excluded.

The chosen e-service projects are:

1- The University Enrolment project which provides the service of admission to public universities and institutions to students;

2- The Family Card System project that provides a set of services such as support commodities provision, social pensions' distribution and health insurance for the benefit of Egyptian families;

3- The Ministry of Justice project that provides quality judicial services through multiple delivery channels to all stakeholders including citizens; and,

4- The CRM project which involves the automation of complaint-handling, and integration with other government systems to improve the services offered to citizens.

The chosen projects were considered to be successful. Despite some of the problems and challenges encountered before and during the projects' implementation, they realised their intended benefits and achieved effective outcomes. Several factors contributed to the success of these projects and the attainment of their benefits. These factors include the deployment of reliable and efficient systems, effective project management by MSAD which coordinated different stakeholders, and partnerships with the private sector.

1.4 Research Motivation

The demand for e-government knowledge has increased, and e-government and e-services research is now of high importance. Consequently, there has been an increasing interest in the e-government topic over the past decade and this interest is growing at a massive rate day after day. Many studies, academic papers, conferences and seminars stress the need to further study e-government from different perspectives, in different contexts, and using different approaches (Angelopoulos et al., 2010; Dadashzadeh, 2010; Pina et al., 2010;

Åkesson et al., 2008; Aichholzer, 2004). As a response to this increasing interest in this topic in academia, the researcher chose to conduct this study.

For almost all governments, e-government is recognised as a main priority. For most developing countries, e-service development in government organisations is certainly an important aim. Likewise, the decision makers in the Egyptian government recognise the need to cope with the recent advances in Information and Communication Technologies. Stakeholders' expectations of the government are getting higher, requiring a need for government to be competent, transparent, accessible and efficient. For this reason, the government offered many scholarships for researchers who want to investigate e-government and e-services. This study is one of those researches motivated by the Egyptian government.

Another reason for this research choice is that the Egyptian government is known to be complex. It has major domination in almost all major service projects in the country. As a result, investigating the transformation of the government to a new electronic setting will have a great impact on many aspects of every citizen's life.

The lack of in-depth case research on a specific country's factors affecting their e-service projects implementation within the government organisation is another reason for conducting this research in the Egyptian context. The factors vary from country to country and any specific country's governments must comprehend certain unique conditions, needs and obstacles (Zaied et al., 2007; Bhatnagar, 2006; Whitby, 2005).

Moreover, most of the studies conducted on e-government were undertaken in developed nations whose IT infrastructure is complete and economic conditions are static. Previous studies conducted in developing nations have paid limited attention to the different features of cultural, environmental, and citizens' differences between developed nations (where most of the results have been generalised) and those of developing nations.

Egypt as a developing country has scarce and limited resources. Therefore, the government needs to implement e-service projects successfully to avoid the cost of failure and waste of resources. This is done by conducting research into how to develop and implement an effective e-service project in its particular environment. As a result, the factors affecting the transformation to electronic services are now investigated. In addition, examining the previous, successful projects helps in highlighting the main obstacles encountered and how they were overcome which could help in repeating the experience within other successful and widespread e-service projects. This will avoid the risk of wasting the scarce resources and increasing public frustration.

1.5 Research Question, Aim, and Objectives

The main research question is: *How can government organisations in Egypt develop and implement electronic service projects successfully?*

By answering this question the research aims to: *Develop a robust framework to support an efficient e-government system focusing on the case of Egypt.*

The overall objectives of the research are to:

1. Investigate the e-service projects that have been implemented by the Egyptian government to identify the current situation (AS_IS) of the e-service projects in Egypt.
2. Determine the problems and barriers that are encountered in the development and implementation of these projects.
3. Identify factors that assist the government to develop and implement e-service projects.
4. Determine the means by which the Egyptian government can overcome the barriers that hinder e-services projects.
5. Develop a process for the implementation of e-government service projects.
6. Develop and validate a framework for e-service that can be implemented by Egyptian government organisations.

1.6 Research Process: An Overview

In working towards the above objectives, the researcher carried out the following steps as illustrated in Figure 1.2. (More details of the research methodology are discussed in chapter 4).

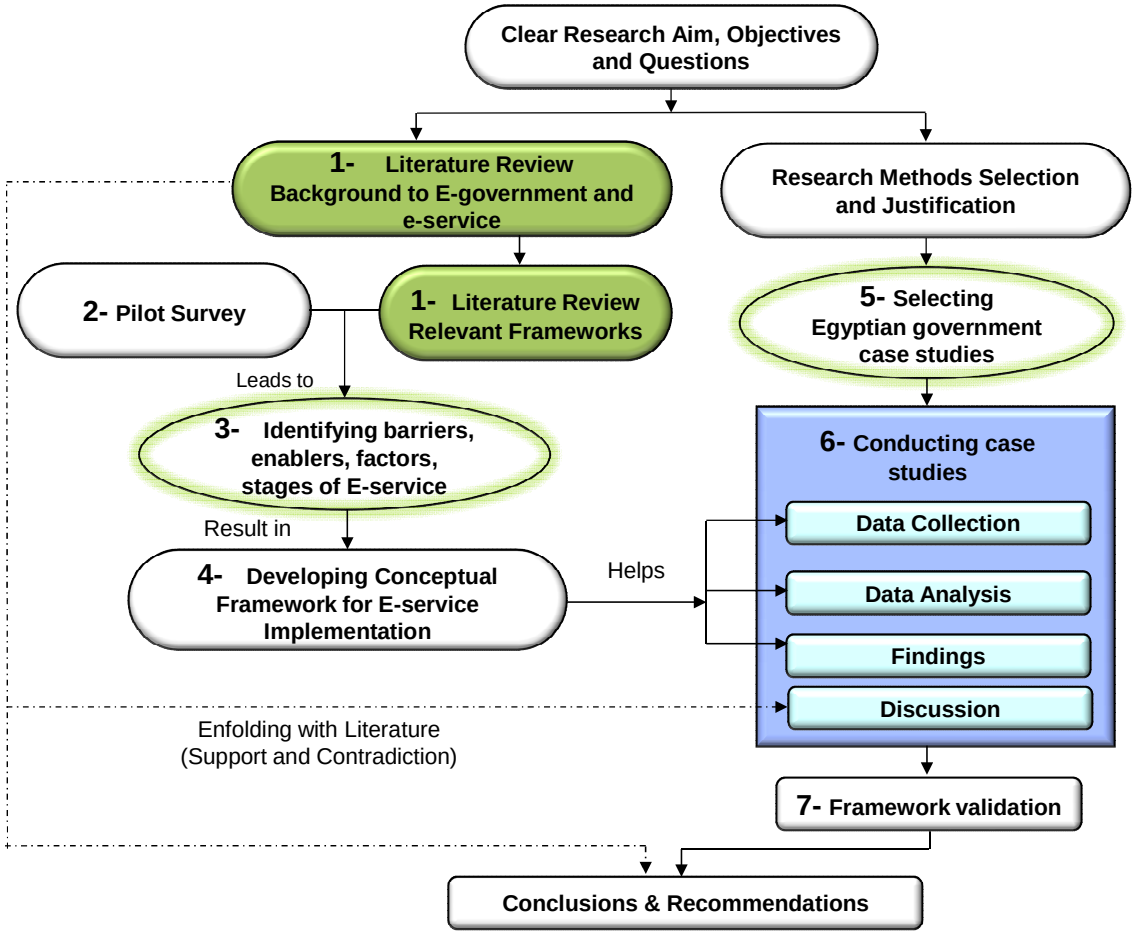


Figure 1.2: Research Process

1. Conduct an extensive literature review to better understand the area of e-government.

2. Conduct a pilot survey to gather initial insights about the factors that influence the e-service projects.

3. Create a list of the barriers and enablers that affect the e-service projects.

4. Develop an initial conceptual framework for e-service implementation based on both the literature review and pilot survey. The conceptual framework includes the lists of barriers and enablers.

5. Contact the government organisations that already implement (or are currently implementing) e-services projects and review with key senior officials the barriers that faced them or the possible ones that may face them in the future, discuss the ways they used, or intend to use, to overcome such barriers, and finally review their perceptions about the enablers that have facilitated their implementation of the projects.

6. Based on the analysis, the initial framework will be modified to accommodate the emerging findings.

7. Finally, both the findings and the final framework will be validated using some common technical fixes to ensure the quality and rigour of this research's findings as a qualitative research and the usefulness of the developed framework.

1.7 Thesis Structure

This study presents a detailed discussion related to the purpose, background, literature review, methodology, data collection and analysis, discussion of the findings and limitations, and recommendations for successful implementation of e-service projects in the Egyptian government. Accordingly, the thesis is divided into nine chapters. An illustration of the thesis structure is shown in Figure 1.3. The description of the chapters is as follows:

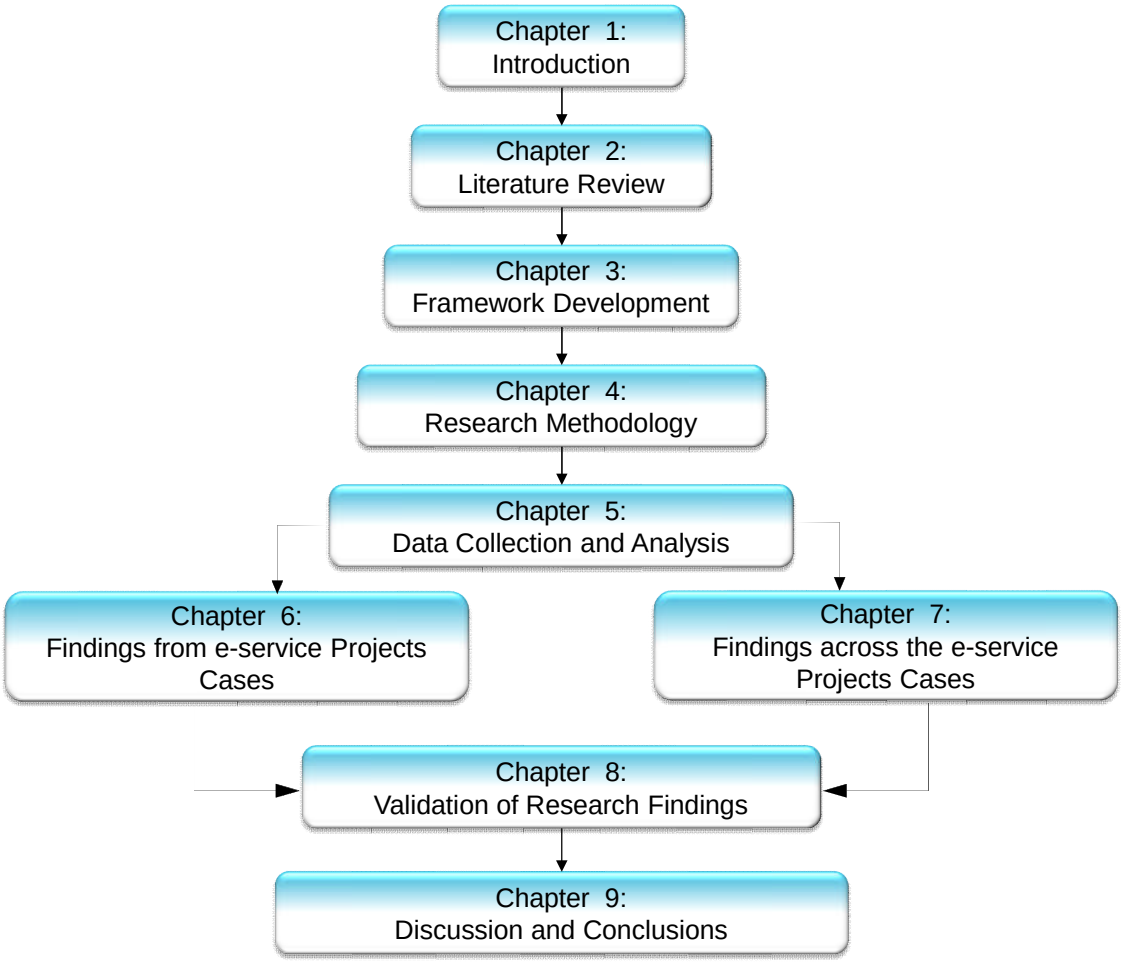


Figure 1.3: Structure of the Thesis

This chapter has outlined the fundamental research issues. The research background is introduced, and the research motivations and significance are discussed. The research aim, objectives and questions are clearly identified. Next, the first part of the literature review is introduced in Chapter two. The purpose of this chapter is to present a critical review of the academic literature on the area of e-government to identify any research gaps in the existing pool of knowledge, and accordingly provide a better understanding of the investigated areas. Chapter three presents the second part of literature review which reviews a number of relevant frameworks to comprehend the contributions made towards governmental e-services. Later in the chapter the proposed framework of the study is introduced along with a description of the main parts and factors of the framework.

Chapter four provides a description of the research strategy and the outline of the research methodology that has been followed to ensure that its design is appropriate to provide the answer to the research question and achieve its aim and objectives. Subsequently, Chapter five describes the details of the procedures undertaken for the data collection, in addition to the techniques and plan applied for data analysis. This includes a description of the pilot study carried out as an exploratory part in the early stages of this research. This will also include a list of the key organisations and interviewees taking part in this research, along with how these organisations and interviewees have been chosen and identified according to certain criteria. Also, a description is included of how the interviews were conducted in addition to how the data have been processed for analysis.

The cases conducted in this study are described in Chapter six. This description begins with explaining the situation before the implementation of these projects, then the key benefits resulting from the projects are identified. The stakeholders of each project, who proposed them and who implemented them are next specified. This is followed by a detailed explanation of how and when the projects were implemented. This is done by specifying the strategies used in the implementation, the key development and implementation steps and chronology, the main obstacles encountered during implementation and how they were overcome, and finally the resources used for these projects. The description of the projects concludes by explaining how they can be sustained and transferred. The chapter concludes with the created networks for each of the case projects which illustrate clearly the outcomes of the data analysis and help the development of the findings

The research findings of the cross-case analysis regarding barriers and enablers to e-government development in Egypt are discussed in Chapter seven. The discussion aims to give an understanding of how they are qualified by local conditions, and thus develops more sophisticated descriptions and more powerful explanations. Chapter eight discusses the procedures and measures adopted to ensure the quality and rigour of this research's findings as

a qualitative research and the usefulness of the developed framework. This is done by discussing some of the famous technical fixes that confer rigour on qualitative analysis, and how these fixes are adopted in this research. These fixes are purposive sampling, grounded theory, multiple coding, triangulation, and respondent validation. Finally, in Chapter nine the researcher gives a review of the whole research process including the literature review, research methods used and data analysis. In addition, a summary of the research findings and conclusions is given, along with the research's contribution to knowledge and its limitations. Finally, implications for both theory and practice with recommendations for future research are offered.

1.8 Chapter Summary

The purpose of this chapter was to outline the fundamental research issues. To fulfil this purpose, the research background has been first introduced. A quick review of the e-government topic revealed a number of factors that affect the development and implementation of e-projects to reach seamless e-government. A comparison between the e-government experiences of developing and developed countries clearly showed the wide gap in different factors including technological infrastructures, capital, knowledge, skills, and effective strategies for establishing and promoting e-government.

In addition, the introduction regarding e-government programs in developing countries facilitated the positioning of the research in its context (the e-government in Egypt as one of the developing countries). Also, a background of Egypt and its e-government, ICT initiatives, and e-service projects is provided. The motivations and drivers for conducting this research are also discussed. Accordingly, the research aim, objectives and questions were identified and an overview and structure of the thesis chapters given. This has to be outlined before starting the next chapter which will begin the analysis of the literature review.

2 CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In chapter 1, the fundamental research issues have been outlined: the research context has been introduced, and the research aim, questions, and objectives have been specified. In this chapter, the literature review associated with the context and research areas related to E-government are examined.

A review of prior, relevant literature is an essential feature of any academic research and serves a vital scientific function (Easterby-Smith et al., 2002; Baumeister and Leary, 1997). An effective review creates a firm foundation for advancing knowledge. It facilitates theory development, closes areas where an excess of research exists, and uncovers areas where research is needed (Webster and Watson, 2002). One type of literature review surveys the state of knowledge on a particular topic. Such reviews provide useful overviews and integrations of an area. These reviews can be valuable as a means of pulling together what is known about a particular phenomenon. With the same ambition, this chapter reviews research and gathers perspectives to propose conceptualisation concerning e-service in the government context.

Therefore, the main objective of this chapter is to:

Present a critical review of the academic literature in the area of e-government to identify any research gaps in the existing pool of knowledge, and accordingly provide a better understanding of the investigated areas.

In order to achieve this aim, the literature presented in this chapter is divided into five main parts. Following this introduction, section 2.2 provides a review of current literature's contribution towards e-government basics to understand how e-government has been defined and explained. This includes a discussion of the main concepts, scope and nature of e-government, a categorisation of the major interactions and stakeholders, and finally a brief analysis of the different models dealing with the stages of e-government development.

Section 2.3 discusses the literature streams that have investigated the major factors either impeding (barriers) or facilitating (enablers) the e-government development. Finally, research gaps in the literature review have been summarised in section 2.4. Figure 2.1 illustrates the focus of the literature review and the main sections in this chapter.

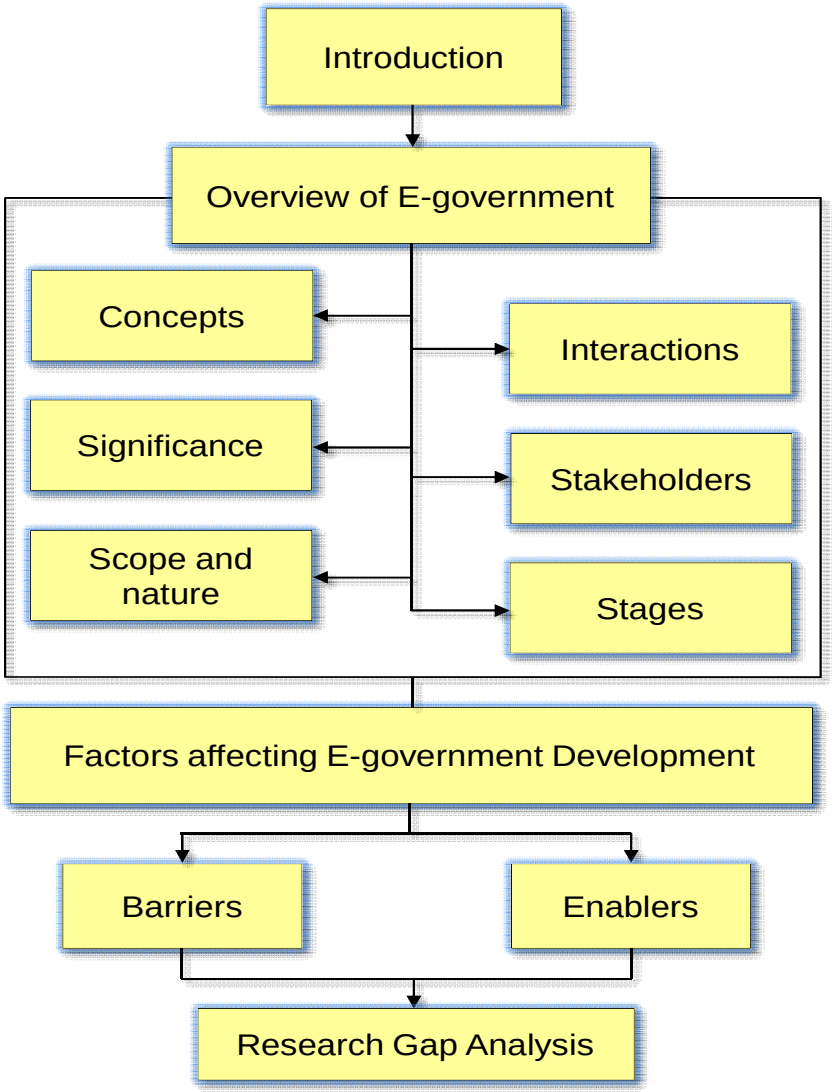


Figure 2.1: Outline of Chapter 2

2.2 E-government: An Overview

The first decade of the 21st century has witnessed the confluence of two powerful, long-term trends in the business world: the shifting of the economy from goods to services; and the rapid expansion of the information economies and electronic networks. This has given rise to the era of “e-service”. In the academic community there is an increased interest among researchers in understanding how e-servicing impacts on citizens; their satisfaction; their loyalty; their service quality expectations; and, how this knowledge leads to better frameworks for e-service provision (Rust and Kannan, 2002; Boyer et al., 2002; Chatfield and Al Hujran, 2007; Esteves and Joseph, 2008).

In the government context, the evolution of “e-government” can be attributed mainly to the prevalence of the information age, since the expansion of ICTs has affected the functions and roles of governments (Palanisamy, 2004). ICT is becoming a need not a choice for government to survive in the digital economy (AL-Rababah and Abu-Shanab, 2010). That is why e-government has been identified as one of the top priorities for governments across the world. Although ICT has been utilised in government for more than 30 years, the e-government era from 2000 onwards, in particular, has been seen as a breakthrough for those with technology-driven views on change in government (Andersen et al., 2010). On a global scale, there is a set of labels, such as e-government, e-governance, one-stop government, digital government, and online government, that reveal the governmental quest for transformation. This is done by pushing and pulling those within government, citizens and relevant private sector actors to adapt to the use of ICT in actions such as the use of online government services.

Organisations and agencies are rapidly setting up e-government systems to provide effective services not only to citizens, but also to private businesses and public administration (Chen et al., 2006). It is an opportunity for governments to take advantage of the new opportunities offered by this expansion of ICT. This would help them embrace remarkable processes of reformation to improve their

performance, enhance transparency and provide greater simplicity in their relations with citizens and businesses, after suffering from administrative incompetence and a lack of fast and effective services.

2.2.1 E-government definition, significance, scope and nature

There are many definitions of e-government that have emerged and been dealt with in papers published over the past decade. Despite its relatively short history, research on e-government has been strongly characterised by a multi-disciplinary nature (Lee et al., 2008). Therefore, the definition of e-government is a diverse and debatable issue, with a broad range of authors, papers, and disciplines contributing to it. The definitions also differ depending on e-government interests and perspectives as well as the community goals and values (Lowery, 2001). With all these definitions, Halchen (2004) claims that there is no universally accepted definition of the e-government concept. It is also argued that when the government is electronic, that means it has electronic databases and communication channels so that the public organisations and agencies can exchange information electronically not manually or paper-based. Even if this kind of government does not provide any electronic services to citizens or businesses, it is still called electronic government. Providing electronic services to businesses and citizens is completing the electronic government scheme.

Table 2.1 illustrates the different definitions of e-government found in the literature. Although it is beyond the scope of this thesis to investigate all e-government definitions, the aim behind illustrating those definitions is to discuss the reasons why it has been an arguable issue among scholars and explore the main e-government characteristics identified from these definitions.

For the purpose of this research, the researcher defined e-government as the use of ICTs in the government organisation for many purposes: improve efficiency and effectiveness in government administration; enhance coordination and collaboration among governmental organisations; and to provide electronic services to other stakeholders including citizens, businesses.

Table 2.1: Definitions of E-government

Authors	Definition
(Bélanger and Carter, 2008)	The use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, businesses and agencies.
(Chen et al., 2007)	“Digital” government is the initiative taken by governmental agencies and organisations to use the Internet technology in increasing their working effectiveness and efficiency.
(Jones et al., 2007)	Constitutes a burgeoning phenomenon with huge investments being made to modernise public sector institutions at all levels. It is a dramatic change and problematic in any organisation, and the political, managerial and cultural environments set within government present an additional challenge.
(Gunter, 2006)	The use of information and communication technologies (ICT) in order to deliver public services to citizens and businesses, and entails the transformation of public services available to citizens using new organisational processes as well as new technological trends.
(Sheridan and Riley, 2006)	A phenomenon that exists without a firm definition. Sometimes it represents traditional government with an “e”, providing an alternative delivery method for government services. For other instances, it is a social, economic and political phenomenon, which promises to re-engineer the nature of democratic government itself.
(Heeks, 2004)	The use of information and communication technologies (ICTs) to improve the activities of public sector organisations.
(Sharma and Gupta, 2003)	The delivery of national or local government services via the use of the Internet or digital means, to citizens, external organisations, elected representatives, and other stakeholders in order to complement, replace, or improve existing delivery systems.

Authors	Definition
(InfoDev, 2002)	The use of (ICT) to transform government by making it more accessible, effective and accountable.
(Aldrich et al., 2002)	Exploiting the power of information to help transform the accessibility, quality, and to help revitalize the relationship between customers/citizens and public bodies who work on their behalf.
(United Nations, 2002)	The use of all information and communication technologies, from fax machines to wireless palm pilots, to facilitate the daily administration of government.
(Fountain, 2001)	“Digital Government” or “Virtual State” is a government that is organized increasingly in terms of virtual agencies, cross-agency and public–private networks whose structure and capacity depend on the Internet and Web. The virtual agency, following the Web portal model used in the economy, is organized by client.
(Whitson and Davis, 2001)	Implementing cost-effective models for citizens, industry, federal employees, and other stakeholders to conduct business transactions online. The concept integrates strategy, process, organisation, and technology.
(AFFIRM, 2001)	Electronic government should enhance the ability of citizens, business and government to engage in transactions with the public sector. It is also about saving money and increasing efficiency.
(Waller et al., 2001)	A government that makes full use of potential of technology to help put its citizens at the centre of everything it does, and which makes its citizens its purpose.
(Okot-Uma, 2000)	The processes and structures pertinent to the electronic delivery of government services to public.
(Means and Schneider, 2000)	The relationships between governments, their customers (businesses, other governments, and citizens), and their suppliers (again, businesses, other governments, and citizens) by the use of electronic means.

Literature indicates that the main focus has been given to different sectors or dimensions related to e-government service delivery, such as Government to Government (G2G), Government to Business (G2B), Government to Employee (G2E), and Government to Citizen (G2C). While these relational dimensions illustrate a number of definitions, there is no universal definition for e-government (Criado and Ramilo, 2003). Moreover, some authors such as Moon (2002) argue that the concept of e-government is without a specified definition because of these different dimensions. Some others like Seifert and Peterson (2002) define e-government from the perspectives of a very basic level, a technical and a political level. The absence of agreement on the definition of e-government could also be the result of viewing e-government from different perspectives, for example, those of societies, businesses, economies, services, organisations and politics. The definition could also vary according to the values, goals and cultures of a community as the United Nations (2002) argues that due to some economic and cultural conditions in some countries, electronic government could be the only means of reaching a reasonable level of electronic transaction with different stakeholders.

Some studies, for example (InfoDev, 2002), also explain the definition of e-government through the benefits attained, such as providing greater access to government information; promoting civic engagement by enabling the public to interact with government officials; making government more accountable by making its operations more transparent and thus reducing the opportunities for corruption; and providing development opportunities, especially benefiting rural and traditionally underserved communities.

Chen et al. (2007) consider the initiative as a permanent commitment made by the government to improve the relationship between the private citizen and the public sector through enhanced, cost-effective, and efficient delivery of services, information, and knowledge. It is also viewed as the means of holding the government accountable to its citizens and as an anti-corruption strategy (Andersen, 2009). Tian and Tainfield (2003) and Al-Sebie and Irani (2005) argue that the definition of e-government can be seen from four viewpoints:

(a) information technology; (b) government services; (c) government efficiency; (d) a political view.

It is noted from reviewing all the previous definitions that they are broad enough to encompass general approaches to e-government implementation. They are not framework-specific. This allows for a wider coverage of e-government frameworks to be used in practice. However, some definitions restrict e-government to Internet-enabled applications. Some restrict its activities regarding e-government as interaction only between government and outside groups. In addition, the definitions which concentrate on the use of ICT for delivering governmental services (Bélanger and Carter, 2008; Gunter, 2006; Heeks, 2004; InfoDev, 2002; United Nations, 2002), and those which focus on the process of e-government services transformation, and the benefits of delivering electronic government services (Whitson and Davis, 2001; Sharma and Gupta, 2003; Aldrich et al., 2002; Okot-Uma, 2000; Seifert and Relyea, 2004) are much more than definitions concentrating on citizens and other stakeholders or those definitions identifying e-government as a social, political or even economic phenomenon (Jones et al., 2007; Sheridan and Riley, 2006; Waller et al., 2001; Means and Schneider, 2000).

E-government has generally been portrayed as a positive change and a change in which technology takes the lead role. But governments have different motivations to take this change and move towards e-government. Some studies consider that the significance of e-government lies in its capabilities to transform the public sector within the areas of internal administration, service delivery, communication and integration (Andersen et al., 2010). Studies concentrating on the stakeholders at the centre of focus consider the basic value of e-government to be the ability of different stakeholders to access government services around the clock (Al-Sobhi et al., 2010; Albusaidy and Weerakkody, 2008; Reffat, 2003). With more extensive use of ICT, government capabilities are increased by efficiency gains, increases in effectiveness, and information quality improvement. Also, with e-government, citizens engage in easier and more frequent interactions with the public officers. Moreover, the actors in the

government sector are able to communicate better and with less cost with other government offices and private companies.

E-government projects involve a wide range of services, products, people, and procedures. The key to understanding the value of e-government is to clearly identify the scope of the project. Without a gauge on scope, it is possible for projects to go over budget, increase in complexity, and become unmanageable. Scope is also necessary to define a unit for assessment. Figure 2.2 illustrates the scope of e-government, which is identified as follows (Heeks, 2001):

• E-administration—improving government processes by reducing costs, managing performance, making strategic connections within government, and empowering citizens.

• E-citizens and e-services—connecting citizens to government by communicating with citizens, supporting accountability by listening to citizens, supporting democracy, and improving public services.

• E-society—building interactions beyond the boundaries of government by working better with business, developing communities, building government partnerships, and opening up new avenues to strengthen social development.

For developing countries' governments, electronic government is a solution to a range of predicaments in the public sector. With promises of decreasing corruption, cutting red tape, reducing government costs, and fluctuating participatory governance, the e-government revolution is a tool for modernisation for public administrations, particularly within inefficient traditional bureaucracy (Bhuiyan, 2010; Salem, 2006; Heeks, 2002a). This could contribute to these countries' economic and social development by reducing transaction costs, improving government transactions with businesses, facilitating delivery of public services to citizens and more efficient government management.

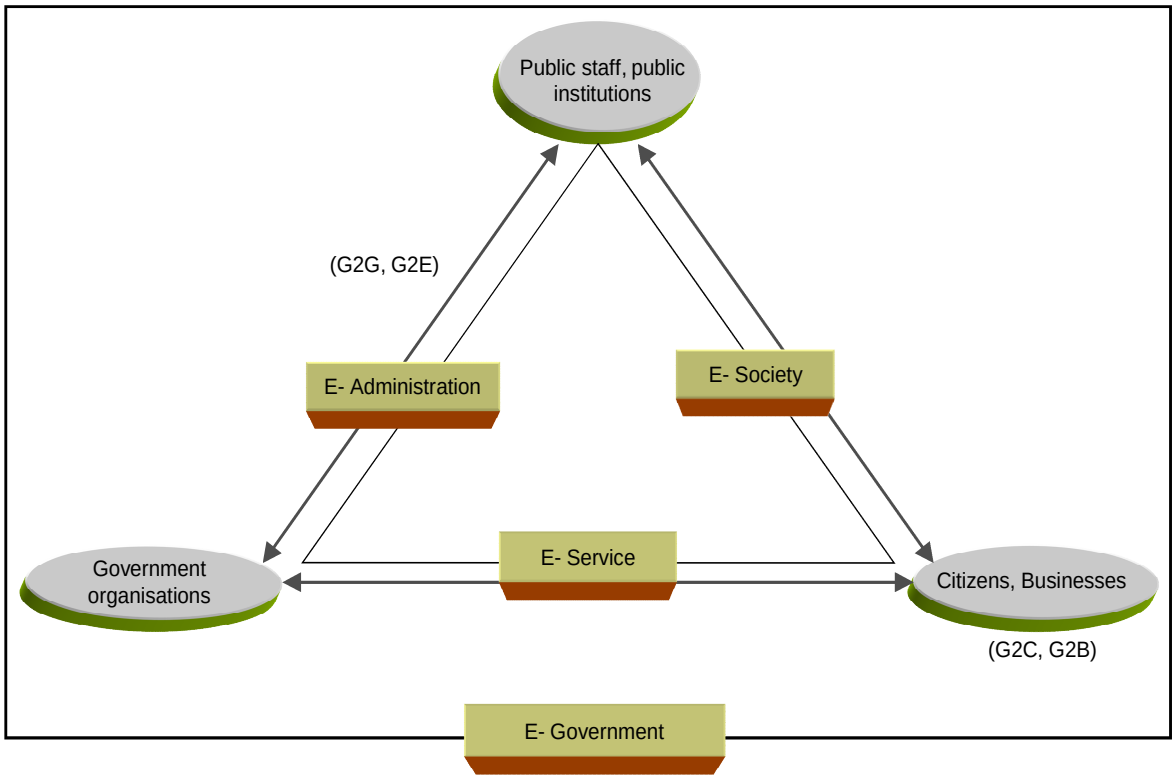


Figure 2.2: Scope of E-government

Source: Heeks (2002b)

2.2.2 Major e-government interactions and stakeholders

In literature, the government, as the service provider, is defined as any public service organisation at the local, state/provincial or national level (Accenture, 2010). Much of e-service literature tends to deal with e-government service users as citizens (Means and Schneider, 2000; Bowers and Martin, 2007; Brown and Brudney, 2003; Bollettino, 2002; Jaeger and Thompson, 2003; Alford, 2002; Lenk and Traunmüller, 2002) although sometimes they may not be citizens (e.g., issues regarding immigration), ignoring other groups involved either in providing or using the service.

The relevant stakeholders are not just those who make use of the service. They can be involved in any stage of electronic service development and delivery, from those who are responsible for organising and supervising public services (Vassilakis et al., 2005), those who possess and provide the necessary background knowledge for designing and implementing services, those who

provide the necessary technological knowledge or the development of the service, adopters who contributes to getting others ready for the electronic service (Heeks, 2006), to the end-users that make use of the service. Even the end users being served by government can be grouped according to the extent to which the service is designed to help them.

Most of the existing literature refers to four types of e-government interactions (Rust and Kannan, 2002; Seifert and Petersen, 2002; Evans and Yen, 2005; Siau and Long, 2005; Pascual, 2003):

- Government to Government (G2G)
- Government to Citizen (G2C)
- Government to Business (G2B)
- Government to Employee (G2E)

These types of interactions are shown in Figure 2.3. In the upstream channel, governmental organisations interact with citizens (G2C) and with the business community (G2B). These interactions are considered the primary goals of governments for adopting ICT solutions. These interactions can include information-based interactive exchanges, negotiation, dissemination of policies, rules and regulations, promotion flows, and service flows which are less time-consuming and easier to carry out. In the downstream channel, they include concepts such as citizen relationship management (CRM and e-CRM).

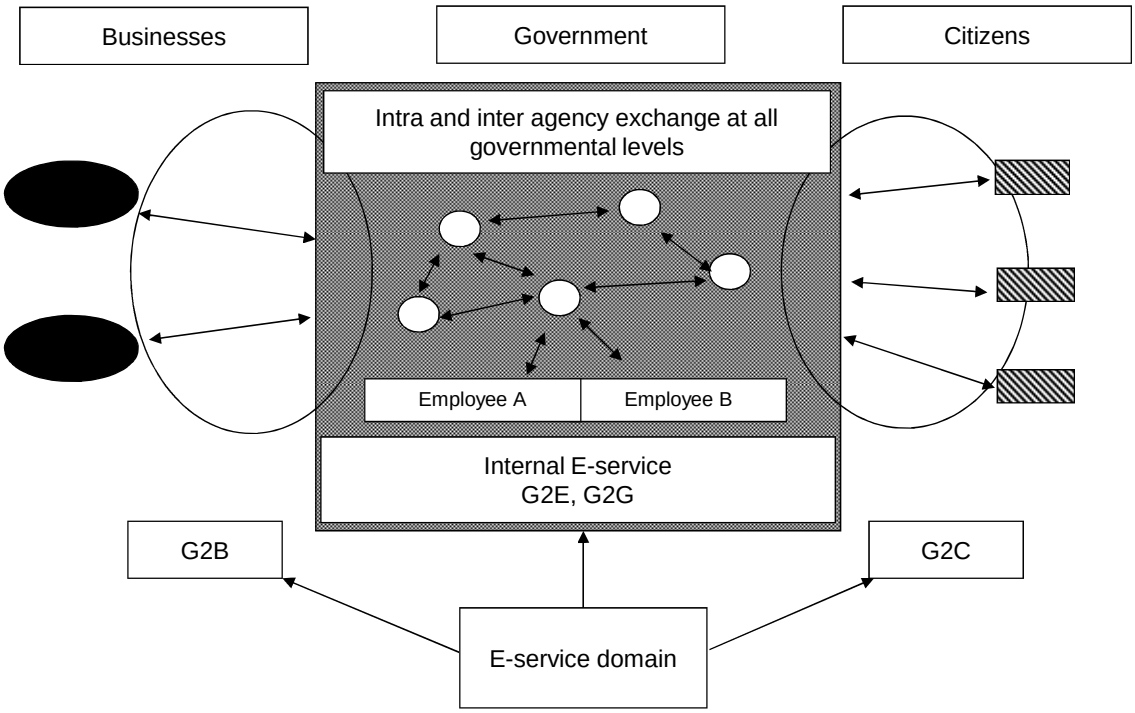


Figure 2.3: Major E-government Interactions
Adopted from Rust and Kannan (2002)

In addition, the e-service concept can be applied in an intra-organisational context. In Figure 2.3, the governmental department or organisation is a customer of another department or organisation, and the e-service concept subsumes such intra-organisational interactions (G2G) and (G2E). These interactions involve sharing and conducting electronic exchanges of data between government actors in an efficient and safe environment.

To make such e-exchanges among different government departments and organisations, national databases must be established and integrated. This is considered the backbone of e-government. The reason is that by completing and linking the databases for the whole government, citizens and businesses alike can benefit from this linkage through having the procedures simplified for them when requesting governmental services throughout the country. Once the governments enhance and update their internal systems and databases, they can communicate efficiently by eliminating redundancy and duplication, hence,

they can conduct electronic transactions with citizens and businesses successfully.

Although considered a focus of all governments (not only e-governments), some studies refer to the interactions between government and their government employees (G2E) to focus on delivery systems within the e-government system and include some services such as human resources training and development. These interactions create substantial savings by allowing for the better management of supply chain issues, as well as information gathering. This allows the government to effectively manage its supply chain so that it keeps minimum inventories and minimum prices and allows others in the supply chain to recommend changes that would lead to increased efficiency (Evans and Yen, 2005).

Those involved in e-government interactions (individuals, constituents, businesses, employees or perhaps government organisation) are grouped according to Siau and Long (2005) with different perspectives. Among the four areas, G2C and G2E involve interaction and cooperation between government and individuals, while G2B and G2G deal with the relationship between government and organisations. Moreover, G2C and G2B involve external interaction and collaboration between government and outside institutes, such as individual citizens and businesses; while G2E and G2G involve the internal interaction and cooperation between governments and their employees, as well as between governments at different levels and distributed locations. Table 2.2 shows this classification, along with the objective and activities for each of the four areas.

Table 2.2: Summary of E-government areas

The government interacts with	**Internally**	**Externally**
Individuals	Employees: G2E Objective: to improve internal efficiency and effectiveness of government administration Activities: -Recognising internal operational processes to adopt best practices -Providing services to internal employees such as training, payroll, travel and reimbursement	Citizens: G2C Objective: to provide satisfactory service to citizens in order to improve government-citizen relationship Activities: -Information access, such as benefits, policies, loans, and educational material -Individual businesses, such as social services, grants/loans, taxes
Organisations	Government: G2G Objective: to enhance cooperation and collaboration between governments of different levels and various locations Activities: -Sharing or integrating federal, state and local government databases, as well as integrating separate systems -Enhancing collaboration or cooperation such as grants, law enforcement, public safety, and emergency management	Businesses: G2B Objective: to provide better services to businesses such as eliminating redundant collections of data and reducing transactions cost Activities: -Providing a single portal and integrated database -Entering the e-market to gain cost-efficient benefits

For an e-government project to succeed, governments' leaders in any country are directed to fulfil the will of the people (Fedorowicz et al., 2010). This view is supported by Flak and Rose (2005) as they state that a clear understanding of stakeholders in e-government, combined with an understanding of e-government's potential effects, enables policymakers to develop e-government in ways that are likely to benefit the majority of stakeholders.

2.2.3 Stages of E-government Development

The implementation of e-government implies different levels of the transformation process. Therefore, the recognition of different stages of e-government aids a better understanding of the factors that hinder this transformation. An important portion of the e-government literature attempts to describe the revolutionary approach to the dynamic phenomenon, which describes the stages of e-government in terms of their degree of technological and organisational sophistication, from developing a Web page to integrating government systems behind the Web interface (Gottschalk, 2009; Trkman and Turk, 2009; Zarei et al., 2008; Zarei and Ghapanchi, 2008; Gil-Garcia and Martinez, 2007; Andersen and Henriksen, 2006; Davison et al., 2005; Layne and Lee, 2001).

In this view, governments evolve from one stage to another. Each of the stages represents different levels of technological sophistication, citizen orientation, and administrative change.

Some of the most important studies regarding stages of e-government development are:

- ***The Four-stage model*** **(Layne and Lee, 2001)**

The model they proposed is adopted to illustrate a possible integrated approach for a One-Stop e-Government. The model has been quoted frequently by various research communities and is one of few examples of studies within e-government where one can identify a linkage and additive value (Grant and Chau, 2005; Reddick, 2004; Yang, 2003). According to this model, e-government evolved through several stages. These stages are presented as the correct path to follow in order to develop a fully integrated e-government initiative. The proposed model is comprised of four stages of growth: cataloguing, transaction, vertical integration, and horizontal integration. The model is developed by an increasing level of complexity and integration from (a) to (d) as shown in Figure 2.4

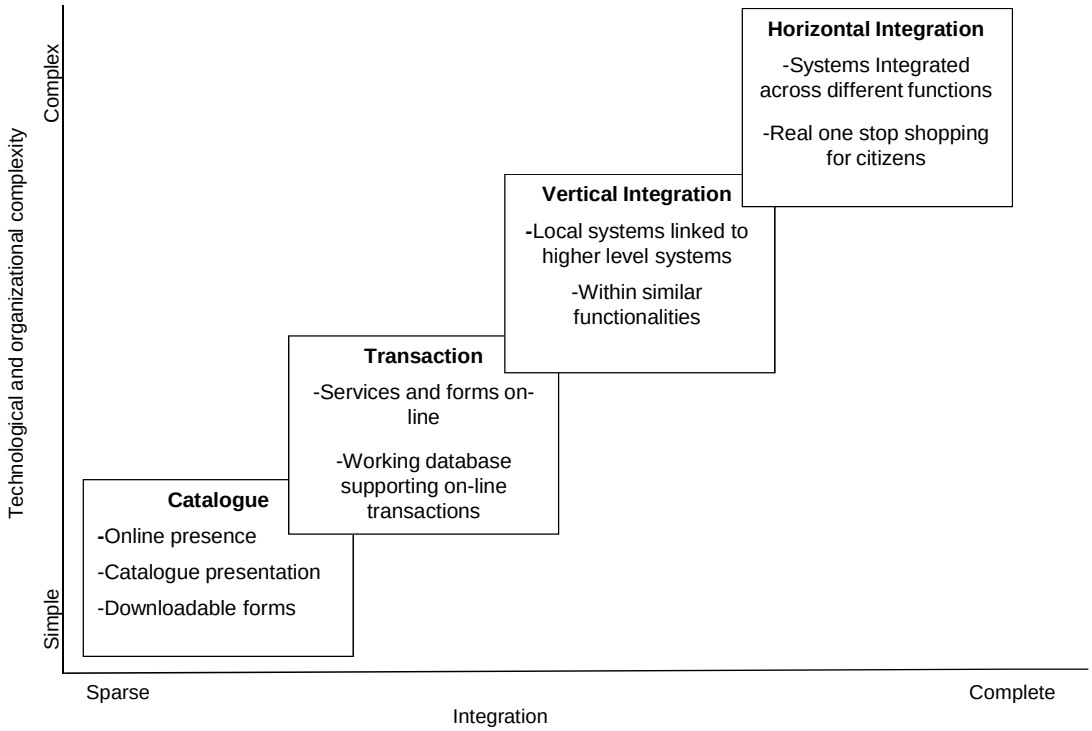


Figure 2.4: Dimensions and Stages of E-government Development

Source: Layne and Lee (2001)

(a) Cataloguing includes establishing a presence on-line, through posted information and downloadable forms, where citizens and businesses have come to expect it. The functionality of the cataloguing stage encompasses providing the least but most efficient amount of information to users. The cataloguing should be organised at first on the basis of departments and then by service, actions, or events.

(b) Transaction includes allowing for dealing with the government directly through online interfaces with live databases. It provides the beginning of e-government as an entity that changes the way people interact with their government. The functionality of the transaction stage encompasses government moving from providing only facts to becoming an active respondent, i.e. two-way communication, forms are filled out and government responds with confirmation and receipts, citizens move from passive to active role and can participate in online forums, and the One Stop portal provides service needs rather than citizens traversing numerous sites to find the correct information.

(c) Vertical integration includes local, state, and federal government to be connected for different functions and services of government which will have permanent changes in government processes and concepts of government. The functionality of vertical integration encompasses local, state, and federal counterpart systems to communicate with each other, a central database or a connected Web of databases and seamlessly integrates the three levels of government for cross referencing and checking.

(d) Horizontal integration includes integration across different functions and services within the same level of government and providing One Stop service centres. The functionality of horizontal integration encompasses databases across functional areas to communicate and share information; information obtained by one agency will propagate throughout all government functions.

- ***Five-stage model of government service evolution*** **(United Nations, 2008)**

According to its report, the UN e-government development index attempts to capture countries' performance value using a five-stage model of maturity (shown in Figure 2.5).

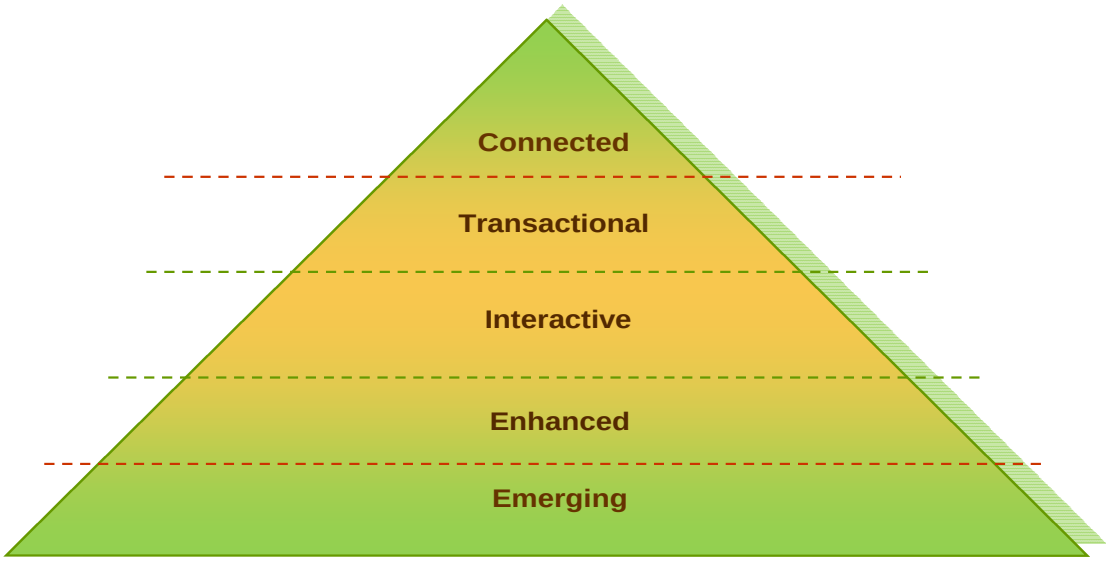


Figure 2.5: Five-Stage Model of online Government Service Development
Source: United Nations (2008)

The model assumes, based on extensive observation and reflection among experts, that countries typically begin with an emerging online presence with simple websites, progress to an enhanced state with deployment of multimedia content and two-way interaction, advance to a transactional level with many services provided online and governments' soliciting citizen input on matters of public policy, and finally to a connected web of integrated functions, widespread data sharing, and routine consultation with citizens using social networking and related tools.

Stage 1 Emerging information services: A government's online presence is mainly comprised of a web page and/or an official website. This website provides information on public policy, governance, laws, regulations, relevant documentation and types of government services provided. It has links to ministries, departments and other branches of government. Citizens are easily able to obtain information on what is new in the national government and ministries and can follow links to archived information. Much of the information is static and there is little interaction with citizens.

Stage 2 Enhanced information services: Governments provide more information on public policy and governance. Government websites deliver enhanced one-way or simple two-way e-communication between government and citizen. They also create links to archived information that is easily accessible to citizens such as forms for government services and applications, reports, laws and regulations, and newsletters.

Stage 3 Interactive services: Governments begin the interactive portal or website with services to enhance its convenience to citizens. They deliver online services such as downloadable forms for tax payments and applications for licence renewals. In addition, the sites have audio and video capabilities and are multi-lingual. Some limited e-services enable citizens to submit requests for non-electronic forms or personal information, which will be mailed to their house.

Stage 4 Transactional services: Governments begin to transform themselves by engaging in two-way communication with their citizens through their websites. It includes options for paying taxes, applying for ID cards, birth certificates, passports and licence renewals, as well as other similar G2C interactions, and allows the citizen to access these services online 24/7. Some form of electronic authentication of the citizen's identity is required to successfully complete the exchange. Government websites process non-financial transactions, e.g. e-voting, downloading and uploading forms, filing taxes online or applying for certificates, licences and permits. They also handle financial transactions, i.e. where money is transferred on a secure network to government.

Stage 5 Connected services: Governments transform themselves into a connected entity that responds to the needs of its citizens by developing an integrated back office infrastructure. They are proactive in requesting information and opinions from citizens using Web 2.0 and other interactive tools. E-services and e-solutions cut across the departments and ministries in a seamless manner. Information, data and knowledge are transferred from government agencies through integrated applications. Governments move from a government-centric to a citizen-centric approach, where e-services are targeted to citizens through life cycle events and segmented groups to provide tailor-made services. Governments create an environment that empowers citizens to be more involved with government activities and to have a voice in decision-making. This is the most sophisticated level of online e-government initiatives and is characterised by:

1. Horizontal connections (among government agencies)
2. Vertical connections (central and local government agencies)
3. Infrastructure connections (interoperability issues)
4. Connections between governments and citizens
5. Connections among stakeholders (government, private sector, academic institutions, NGOs and civil society)

- ***Nine-Stage Model* Zarei et al. (2008)**

These authors demonstrate the progress of e-government in nine stages (see Figure 2.6).

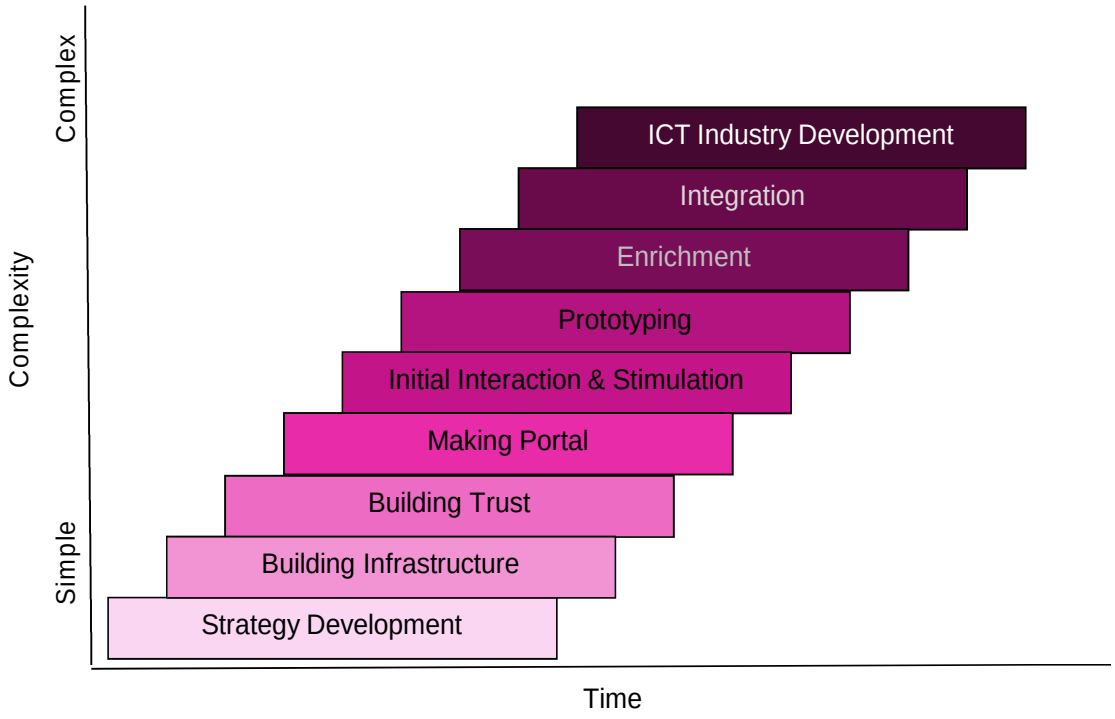


Figure 2.6: E-government Nine-stage Development Model
Source: Zarei et al. (2008)

Strategy development: In this stage, the government and IT development officials should develop e-government strategies. It means that government should set the priority section(s) for the e-government development, including G2G, G2B, and G2C.

Building infrastructure: E-government demands an up-to-date and suitable infrastructure. The technology used for this purpose should enable various potential applications. In this stage, attention should be paid to the telecommunication infrastructure, and to the creation of a special constitution for such a development.

Building trust: In this stage, great attention must be paid to gaining citizens' trust in the early stages of e-government implementation. A part of the trust

building involves establishing users' trust in the e-government. In order to strengthen this trust, extensive work should be done to ensure proper security levels.

Making a physical and electronic portal: This stage of the e-government development addresses the introduction of a single portal for the government. This portal is not limited to a single contact point in the Internet with extensive links to other governmental sites; rather, it should be a point for the coordination of various organisations, in order to develop their applications.

Initial interactions and stimulation: In this stage, the government officials should obtain a thorough understanding of e-government potential and recognise that ignoring this emerging technology will make them unable to fulfil their needs. Training is one of the fundamental pillars of this phase, where managers become familiar with work under new circumstances and are prepared for changes.

Prototyping: Here, a number of organisations that have more customer contact, crucial services or are significantly inefficient are selected. Focusing on these quick-win projects could play a major role in demonstrating the benefits of e-government for a wide range of those suspicious of this emerging technology.

Enrichment and multi-dimensional development: In this phase, trust and interactions need to be strengthened. This is impossible when running scattered projects with insignificant knowledge sharing. A constitution must be established to lead the full implementation of this technology nationally. It would facilitate completion and integration of value-added projects within the government, and would set up a schedule for full implementation.

Integration: This phase completes the e-government implementation, and leads to the integrated service delivery to citizens. This demands definition and promotion of concepts, techniques, and instrumentation of the e-government integration thoroughly.

Development of the ICT industry: This stage of the e-government development refers to the development of the ICT industry aligned with the ever-increasing demands of the government to the new services in various businesses.

- ***Gartner four-stage model***

Gartner demonstrates the progress of e-government in four stages (see Figure 2.7). First, immediate action is initiated toward the creation of a virtual environment on the Internet in the **Web Presence stage**, in order to provide the public with access to basic information. The second stage or **Interaction** refers to providing a website with search ability, and to providing the public with access to various forms and sites. Also, users are able to contact governmental agencies through the website or self services. **Transaction**, as the third stage, implicates the online execution of public services by users (including customers and businesses) such as the payment of accounts balances and receiving licences. Finally, the **Transformation** stage is seen at the regional and national levels. Governments transform the current operational processes to provide more efficient, integrated, unified, and personalised service. This also includes integration among internal and external applications, in order to provide full communication between the governmental offices and non-governmental organisations (Baum and Di Maio, 2000).

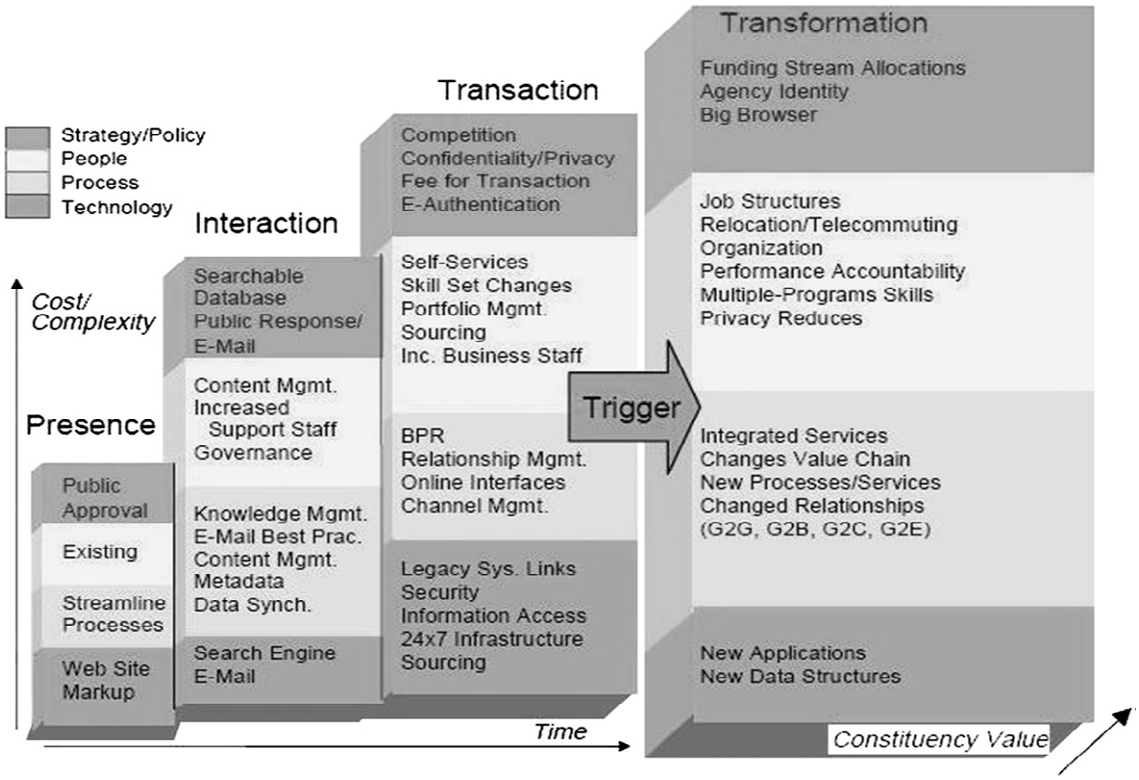


Figure 2.7: Gartner's Four-Stage of E-government Model

Source: Baum and Di Maio (2000)

The previous models have been quoted frequently by various research communities and are good examples of studies within e-government research area. The reviewed models highlighted linkage and additive value across the different stages of e-government maturity. They all predict that e-government will move beyond information provision and interactivity to become fully transactional. They also predict that e-government will fundamentally transform the relationship between government and citizens.

However, some of these models are generally descriptive in nature. Also, some of the models ignore or miss the possibility that barriers to e-government adoption exist. With the new generations of IT, the strategic use of IT must be directed to cover more dimensions than simply integration issues and supportive functions of formal government primarily provided by technology.

Furthermore, the majority of e-government models propose a sort of linear progression (each successive stage of e-government is better than the previous

one) and stepwise (governments have to proceed through each step in a series as e-government evolves, generally beginning with dissemination, then transactions, and finally to some form of integration) (Coursey and Norris, 2008; Affisco and Soliman, 2006; Shackleton et al., 2006). So, it is argued that they are oversimplified. In other words, e-government development phases do not necessarily follow each other in a chronological or linear order. Some countries for example, in the developing world, have a much faster learning curve; they can almost concurrently fulfil the requirements of all phases (Yildiz, 2007). In addition, the models do not tell how this progression or evolution will occur or how long it will take to fully unfold. Some authors have overcome this criticism by presenting an e-government model that can be implemented starting at a local level and progressing to higher levels of the government (Chen et al., 2009). The maturity models for e-government need to offer guidance as to how they could actually be applied in real life. They need to capture the future use of IT applications with the external users such as citizens, businesses, and other governmental agencies when performing the core activities in government. Finally, they should take into consideration the potential applications of political participation changes.

Finally, the majority of reviewed models have been developed to implement the ideas commonly used in many developed countries. They are not convincing as absolute guidelines for e-government progress in developing countries (Zarei et al., 2008). It seems these models are more appropriate for developed countries that have up-to-date technology, and more non-technical issues such as concentration on public awareness and e-readiness. Such models may not be applicable to e-government development in developing countries since their technical and non-technical infrastructures are not as mature as those of developed countries (Yildiz, 2007). It is argued that the different infrastructures of these countries create a need for more customised models (Zarei et al., 2008).

2.3 Barriers and Enablers of E-government Development

2.3.1 Identified Barriers from Literature

While there is increasing adoption of electronic services by governments, the level of implementation differs from country to country. However, the pace with which electronic services are made available and adopted is lower than planned in the least developing countries (Reffat, 2003; Vassilakis et al., 2005). Governments tend to be slow in releasing new services and citizens often prefer to conduct transactions with the government through paper forms and physical presence rather than using online methods (Hassan et al., 2010).

Furthermore, many literatures take into consideration the differences between developing and developed countries, and they pay attention to the factors behind these differences concerning e-service development (Chen et al., 2006; Chen et al., 2007; Schuppan, 2009; Hamner and Al-Qahtani, 2009; Lau et al., 2008; Al-Fakhri et al., 2008; Mukabeta et al., 2008; Abanumy et al., 2005; Gil-García and Pardo, 2005; Basu, 2004).

The differences indicate that e-government in less developed countries faces slower progress or even stagnation because it encounters multiple and complex barriers and challenges. Although some of these barriers are also faced by developed countries, the ability of these countries to recover and overcome the challenges is far ahead of the developing countries' abilities (Chengalur-Smith and Duchessi, 2002). The reason is the difference in Internet technological infrastructures, practices, usage, and sufficient capital to build up expensive national information infrastructure and sufficient knowledge. That is why the developed countries' governments are leaders in e-services and reaping the vast majority of initial gains.

Identifying and overcoming these barriers for developing countries is not always easy, given that the most currently published e-service strategies are based on experiences from developed countries, which may not be directly applicable to developing countries. It takes several research disciplines to identify and understand these challenges. However, planning for e-government, then

developing and implementing this new initiative, requires deep comprehension and crucial recognition of the barriers that might stand in the way.

From reviewing the literature about e-government barriers, the following should be noted:

- Although many studies have been conducted to identify the barriers of e-government development, these studies had different objectives and classified the e-government barriers accordingly. For example, the barriers are sometimes classified according to the e-government stage (barriers of e-government in transactional stage, or integration stage) e.g. Al-Sebie and Irani (2005), and sometimes they are identified based on the context in which the research is applied (barriers of e-government in the Middle East, developing countries, or even a specific country's context) e.g. Chen et al. (2007), Al-Sobhi et al. (2010), Bhuiyan (2010), Basu (2004), and Chalhoub (2010).

- Barriers also have been classified according to a different perspective, such as barriers to adoption, or diffusion (Sarabdeen and Rodrigues, 2010; Altameem et al., 2007; AlShihi, 2006). Based on the different stakeholder groups, there are different sets of barriers. Thus, there are barriers for the G2C interactions and also different barriers for G2B, G2E, or for G2G (Fedorowicz et al., 2010; Rowley, 2011; Pinteri, 2010; Lagzian, 2007). Finally, barriers have been also identified according to the level of the government whether local, state/provincial or national level (Criado and Ramilo, 2003; Coursey and Norris, 2008; Chen et al., 2009; Ancarani, 2005).

- There is a significant understanding of the human and contextual factors that influence and affect the e-government introduction and development. However, in many studies e.g. (Gichoya, 2005; Buckley, 2003), these perspectives are based on private sector assumptions, and they are confused positions about e-government and the underlying philosophies supporting it.

- The research uses a wide range of research methods, including interviews, document analysis, questionnaires, etc. Also, the review of barriers identified a diversity of views and ideas as e-government barriers can be seen at the crossroads of a number of research domains, particularly business/ management, governance, computer science, information systems, public administration, and political science. For this reason, the results of these studies cannot be generalised.

- Research clearly acknowledges and highlights contextual issues and factors that impact and influence “e” use in developing countries’ public sectors, although research done is still not enough to offer helpful and practical guidance and implementation guidelines for researchers and practitioners in their future plans regarding e-government in the developing countries.

Based on examining a wide range of prior literature, with a special focus on the context of developing countries, a generic list of barriers to e-government development is identified, along with the associated references, in Table 2.3.

Table 2.3: Identified E-government barriers from literature

Barrier	References
Resistance to change	(Deakins et al., 2010; Chen et al., 2007; United Nations, 2002; Vassilakis et al., 2005; Al-Fakhri et al., 2008; Altameem et al., 2007; AlShihi, 2006; Ebrahim and Irani, 2005; Vassilakis et al., 2007)
Lack of suitable legal framework/ Unsuitable legislations	(United Nations, 2002; Reffat, 2003; Vassilakis et al., 2005; Basu, 2004; Altameem et al., 2007; AlShihi, 2006; Heeks, 2003)
Lack of awareness/ information	(Chen et al., 2007; United Nations, 2002; Vassilakis et al., 2005; Al-Fakhri et al., 2008; Altameem et al., 2007; Vassilakis et al., 2007; Heeks, 2003)
Digital divide	(Eyob, 2004; Lam, 2005; Sharma and Gupta, 2003; Fountain, 2001; Reffat, 2003; Bhuiyan, 2010; Jaeger and Thompson, 2003; Bélanger and Hiller, 2006)
Over-ambitious milestones	(Lam, 2005; Heeks, 2003; Heeks, 2000; AFFIRM, 2002)
Absence of/ Poor policy making	(Lam, 2005; Reffat, 2003; Vassilakis et al., 2005; Basu, 2004; Dwivedi, 2009)
Absence of an E-government champion	(Lam, 2005)
Lack of financial resources	(Deakins et al., 2010; Norris and Moon, 2005; Lam, 2005; Heeks, 2004; United Nations, 2002; AlShihi, 2006; Ebrahim and Irani, 2005; United Nations, 2003b)
Lack of clear vision and strategy	(Lam, 2005; United Nations, 2002; Altameem et al., 2007; Heeks, 2003; Lagzian, 2006)
Lack of ICT skills/ professional staff	(Eyob, 2004; Bhuiyan, 2010; Vassilakis et al., 2005; Altameem et al., 2007; Heeks, 2003; Lagzian, 2006; Gagnon et al., 2010)
Lack of coordination among organisations	(Eyob, 2004; Lagzian, 2006; Gagnon et al., 2010)
Lack of partner readiness and cooperation	(Vassilakis et al., 2005)
Lack of transparency	(Reffat, 2003; Lagzian, 2006)
Complex or poor organisational structure	(Heeks, 2004; Sharma and Gupta, 2003; Reffat, 2003; Vassilakis et al., 2005; Al-Fakhri et al., 2008; Altameem et al., 2007)

Barrier	References
Insufficient support from the top	(Norris and Moon, 2005; Moon, 2002; Heeks, 2004; Sharma and Gupta, 2003; Bhuiyan, 2010; Lau et al., 2008; Altameem et al., 2007)
Negative attitude towards technology	(Chen et al., 2007; Sharma and Gupta, 2003; Jaeger and Thompson, 2003; Vassilakis et al., 2005; Chalhoub, 2010)
Lack of e-communications with all constituents for e-service delivery	(Sharma and Gupta, 2003; Fedorowicz et al., 2010; Heeks, 2000; Lagzian, 2006; Zhang et al., 2005)
Corruption	(Sharma and Gupta, 2003; Bhuiyan, 2010)
Computer literacy	(Bélanger and Carter, 2008; Al-Sobhi et al., 2010; Jaeger and Thompson, 2003; Abanumy et al., 2005)
Poor project management	(United Nations, 2002; AlShihi, 2006; Heeks, 2003; Lagzian, 2006)
Inactive citizens' participation	(Norris and Moon, 2005; Chen et al., 2007; Sharma and Gupta, 2003)
Multi-lingual/ multi-cultural issues	(Jaeger and Thompson, 2003; Vassilakis et al., 2005)
Security of confidential data	(Eyob, 2004; Lam, 2005; Reffat, 2003; Vassilakis et al., 2005; Fedorowicz et al., 2010; Al-Fakhri et al., 2008; Basu, 2004)
Privacy of personal data	(Chen et al., 2006; Lam, 2005; Al-Sobhi et al., 2010; Bhuiyan, 2010; Jaeger and Thompson, 2003; Yang, 2003; Altameem et al., 2007; Gagnon et al., 2010)
Use of outdated technology	(Lam, 2005; Lagzian, 2006; Gagnon et al., 2010)
Poor technological infrastructure	(Al-Sobhi et al., 2010; Bhuiyan, 2010; Altameem et al., 2007; Heeks, 2003; Wang, 2003; Weerakkody and Choudrie, 2005)
Unreliable Internet access	(Jaeger and Thompson, 2003; Vassilakis et al., 2005)
Lack of expert assistance	(Vassilakis et al., 2005; Ebrahim and Irani, 2005; Heeks, 2000; Zhang et al., 2005; Gilbert et al., 2004)
Lack of e-government applications	(Eyob, 2004; Salem, 2006; Fedorowicz et al., 2010; Ebrahim and Irani, 2005; Lagzian, 2006; Zhang et al., 2005; Schwester, 2009)

Barrier	References
Difficulty in re-engineering of internal processes	(Norris and Moon, 2005; Eyob, 2004; Lam, 2005; Sharma and Gupta, 2003; Vassilakis et al., 2005; Heeks, 2003)
Lack of trust	(Eyob, 2004; Chan et al., 2010; Bélanger and Carter, 2008; Al-Sobhi et al., 2010; Vassilakis et al., 2005; Layne and Lee, 2001; AlShihi, 2006; Ebrahim and Irani, 2005)
High technology set-up cost	(Lagzian, 2006; Gagnon et al., 2010)
High technology competence	(Chen et al., 2007; Vassilakis et al., 2005; Fedorowicz et al., 2010)
Changing organisational culture	(Chen et al., 2007; Altameem et al., 2007; Gagnon et al., 2010)
Lack of methods for productivity and progress monitoring & accountability	(Salem, 2006; Jaeger and Thompson, 2003; Vassilakis et al., 2005; Schwester, 2009)
Insufficient user authentication methods	(Vassilakis et al., 2005; Basu, 2004)
Incompatible data standards/ different security models	(Lam, 2005; Sharma and Gupta, 2003; Reffat, 2003; AlShihi, 2006)
Economic conditions	(United Nations, 2010; Bhuiyan, 2010; Altameem et al., 2007)
Very high demand/ expectations	(AlShihi, 2006; Zhang et al., 2005; Gilbert et al., 2004)
Lack of organisational readiness	(Lam, 2005; Salem, 2006; Fedorowicz et al., 2010)

The previous generic list consists of elements that get in the way of e-government development. The researcher grouped these elements into six major categories. However, many elements can fall under more than one category, depending on different perspectives. These categories are as shown in Table 2.4:

Table 2.4: Major categories of E-government barriers

Main categories	Barriers
Political Barriers	Insufficient support from the top level Lack of clear vision and strategy Lack of e-government goals and objectives Over-ambitious milestones Absence of detailed policy Too many initiatives Very high demand and expectations
Administrative/ Organisational Barriers	Complex or poor organisational structure Poor project management Lack of organisational coordination between organisations Conflicting priorities of organisations Lack of innovation incentives in public sector organisations Weak policy implementation An Agency-centric rather than a Customer-centric focus Lack of e-government applications Lack of e-communications with all citizens for e-service delivery Lack of partner readiness and cooperation Difficulty in re-engineering of internal processes Cost justification issues Lack of organisation readiness No standard administrative processes Government monopoly Transparency concerns Corruption
Cost, Economic and Resource Barriers	<u>Human resources:</u> Lack of skills amongst staff Lack of expert assistance <u>Financial resources:</u> Insufficient budget for “e” initiatives and projects <u>Economic:</u> Poverty/ Financial crisis <u>Cost barriers:</u> Cost of developing e-government services/ Cost for government of providing services through multiple channels/ High service user cost/ High technology set-up cost

Main categories	Barriers
Legislative Barriers	Lack of suitable legal framework/ Unsuitable legislations Complexity of required policies Lack of methods for productivity and progress monitoring and accountability Absence of clear data protection guidelines for sharing of information No right to communicate electronically with public authorities. Inadequate policies on freedom of information Legal concerns with private-public partnerships Employment laws that constrain e-enabled restructuring of jobs Heightened risks of liability Copyright constraints on reuse of information
Technological Barriers	Poor technological infrastructure/ use of proprietary technology Security / privacy/ encryption requirements Lack of standards for quality, design of websites/portals Digital divide The politics of information Unreliable Internet connections Insufficient user authentication methods Lack of technological standards Difficulties in interoperability with installed IT systems Lack of interoperability between IT systems Lack of secure electronic identification and authentication Low levels of Internet use amongst certain groups High technology competence
Cultural Barriers	Lack of awareness/ information Inactive citizens' participation E-literacy/ Multi-lingual/ multi-cultural issues Resistance to change (citizens and staff) General negative attitude toward technology Lack of trust Changing organisational culture Lack of competitive pressures forcing change Privacy concerns Security concerns Lack of motivation

2.3.2 Identified Enablers from Literature

While barriers hinder e-service progress, enablers motivate and encourage it. They are behind the success and continuity of the e-government service projects. This is the reason why they should be well identified and recognised. Literature has identified a number of forces motivating e-government initiatives. Furthermore, some studies have classified these forces according to different stakeholders groups.

For example Bonham and Seifert (2003), assumed that for G2G, e-government initiatives could be triggered by the interest in improved efficiency or the interest in using IT solutions to streamline procedures and trim costs. Also, a major motivating force behind interest in the G2B sector could be the growing demand by policymakers for cost cutting and more efficient procurement. Interest in G2C initiatives could be driven by a combination of several factors such as citizen demand, and the interest in better government through improved efficiency and more reliable outcomes.

Altameem et al. (2007) also argue that the governing drivers for the successful implementation of e-government are: Vision, Strategy, Funding, Citizen-centric, Top management support, and leadership. They argue that these factors influence people's decisions to adopt e-government initiatives and furthermore can assist or limit the public sector's effort to diffuse e-government initiatives.

Melin and Axelsson (2009) report on several sets of success factors, for example, top management commitment, linkage to business, technical alignment, knowledgeable personnel, and user involvement. Also, the need to involve users in a sustainable way is also pointed out as a key issue by Carter and Bélanger (2005), and Chan and Pan (2008).

Gil-Garcia and Pardo (2005) as well as Ho and Pardo (2004), have carried out extensive reviews of key success strategies of e-government development initiatives. These strategies according to Gil-Garcia and Pardo (2005) include: information and data, information technology, organisational and managerial, legal and regulatory, and institutional and environmental strategies. Ho and

Pardo (2004) selected five specific factors to do their gap analysis research to investigate the success of e-government initiatives. These factors are: top management commitment, linkage to business, technical alignment, knowledgeable personnel, and finally, user involvement.

Although the previous (and other) studies highlight many enablers to the success of e-government development, these studies are relatively few compared to the studies concentrating on the barriers to e-government development. The factors identified as enablers in the literature are presented in Table 2.5.

Table 2.5: Identified Enablers from Literature

Enabler	References
User involvement	(Melin and Axelsson, 2009; Carter and Bélanger, 2005; Ho and Pardo, 2004)
Top management commitment	(Melin and Axelsson, 2009; Ho and Pardo, 2004)
Long term vision and strategy	(Altameem et al., 2007)
Funding	(Altameem et al., 2007; Lagzian, 2006)
Technological infrastructure/ advancement/ standards	(AlShihi, 2006; Heeks, 2003)
National Information Infrastructure	(Gil-Garcia and Pardo, 2005).
Knowledgeable personnel	(Sharma and Gupta, 2003; Heeks, 2003; Melin and Axelsson, 2009; Ho and Pardo, 2004).
Organisational/ citizen culture	(Jaeger and Thompson, 2003)
Legislative and regulatory infrastructure	(Sharma and Gupta, 2003; Gil-Garcia and Pardo, 2005)
Public processes re-engineering	(AlShihi, 2006; Heeks, 2003)
Organisational and Managerial Strategies	(Sharma and Gupta, 2003; Gil-Garcia and Pardo, 2005)
Strong leadership	(Heeks, 2003)
Citizen pressure and demand	(Lagzian, 2006)

In conclusion, it is evident that researchers and practitioners have long held an interest in digitisation in the public sector. However, it is clear that there are significant difficulties to be overcome before the benefits of an e-government transformation can be enjoyed, especially in developing countries with government monopoly, lack of human and financial resources, poor ICT infrastructures and insufficient experience of e-government design and implementation. By placing special emphasis on explaining the main barriers and enablers along the process of e-government development, two generic lists for barriers and enablers have been outlined. This is believed to help the researcher for the next stages of this research.

2.4 Research Gaps Analysis

The previous review of literature revealed a number of research gaps. Following Atuahene-Gima's (2004) classification, the gaps are grouped under four categories: theoretical, empirical, contextual, and substantive. Theoretical gaps refer to insufficient explanation or prediction of some phenomena (the "why"). Empirical gaps refer to the lack of empirical studies or inconsistent findings on some phenomena. Contextual gaps refer to the generalisability of the findings of existing research. Substantive gaps refer to the lack of managerial understanding of "how". The different classifications of research gaps are illustrated in Figure 2.8.

2.4.1 Theoretical Gaps

There is an absence of frameworks for different challenges that are faced when attempting to implement e-service projects. Also, there is an absence of frameworks outlining the different enablers that facilitate such implementation. There is a need for a framework to classify both barriers and enablers into different groups. Also, there is insufficient clarification of why certain groups of barriers appear in different phases of e-service projects' development and implementation. Finally, there are not enough explanations of the solutions for how to overcome the barriers encountered during the different phases of e-service projects' implementation.

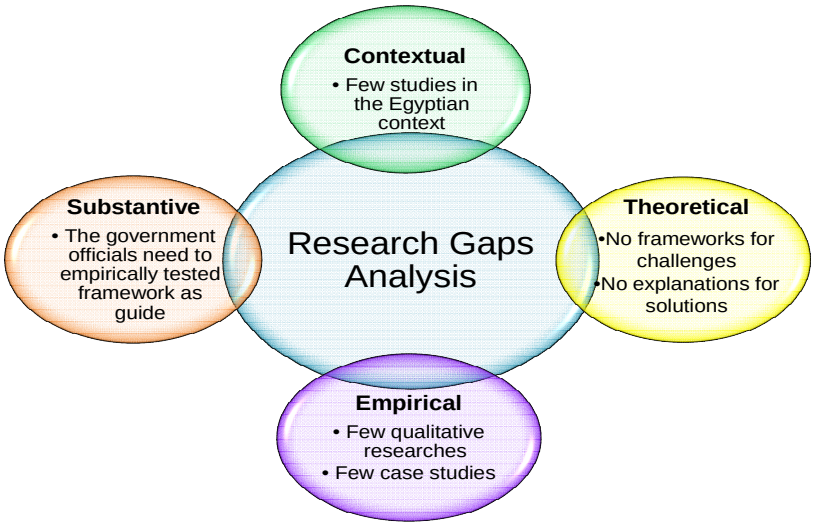


Figure 2.8: Research Gaps Classification

2.4.2 Empirical Gaps

There are few qualitative researches that examined the factors affecting the e-service development and implementation. Also, there are very few studies that have been conducted using in-depth case studies for the purpose of investigating the factors affecting e-service projects implementation. There is a need for an empirical research that uses the interview technique to explore the opinions of the senior officials responsible for the development and implementation of e-service projects in the government context. There are few interpretive researches that attempt to understand and interpret how the e-service phenomenon is explained and given meaning subjectively by its relevant stakeholders.

2.4.3 Contextual Gaps

There are no qualitative studies that examined the factors affecting the e-service development and implementation in the Egyptian government context. There is a need for a research to investigate how Egypt in particular can plan, implement and provide successful e-service projects, overcome barriers and avoid project failures. There is a need for empirical research from which the findings can be generalised to all e-service projects in the Egyptian government context.

2.4.4 Substantive Gaps

Given the high failure rates of e-service initiatives and the huge direct and indirect costs of such failures, there is a managerial requirement for empirically tested frameworks that enable officials to understand how best they could develop and implement e-service projects in their governmental organisations. In addition, there is an existing ambiguity of successful e-service projects development amongst people who are involved in e-government programs.

2.5 Chapter Summary

This chapter has analysed the previous literature on the area of e-government to provide a better understanding of how e-government has been defined and explained. This included a discussion of the main concepts that explore the main e-government characteristics, and the different sectors and dimensions related to e-government service delivery, such as Government to Government (G2G), Government to Business (G2B), Government to Employee (G2E), and Government to Citizen (G2C).

Different scopes of e-government such as e-administration, e-citizens and e-services, and e-society have been explained as a prelude for determining the scope adopted for this research. A categorisation of the major interactions and stakeholders is made, not only those who make use of the service, but also those involved in any stage of e-service development, and finally a brief analysis of the different models dealing with the stages of e-government development is given.

Finally, a number of research gaps have been revealed by the literature review. These gaps have been summarised and classified into theoretical (insufficient explanation or prediction of some phenomena), empirical (the lack of empirical studies or inconsistent findings on some phenomena), contextual (the generalisability of the findings of existing research), and substantive (the lack of managerial understanding of “how”).

3 CHAPTER THREE: CONCEPTUAL FRAMEWORK DEVELOPMENT

3.1 Introduction

In the previous chapter, a critical review of the literature in the area of e-government has been presented and has provided a better understanding of the investigated areas. Also, the review pointed to a number of research gaps that this research will address in the rest of its chapters. Therefore, the objective of this chapter is to:

Propose a conceptual framework for identifying the main barriers and enablers of governmental e-service development. The framework will be developed based on a comprehensive review of the relevant models and an amalgamation of prior literature that has conceptualised the e-service challenges in the government context.

There are four sections in this chapter as illustrated in Figure 3.1. Section 3.1 briefly introduces the chapter followed by section 3.2 which reviews a number of relevant frameworks to comprehend the contributions made towards governmental electronic services. Section 3.3 introduces the proposed framework of the study. This section also includes a description of the main parts and factors of the framework. The chapter concludes with a summary.

3.2 Review of Relevant Models

Under the name of 'governmental electronic service', a series of efforts are grouped, which tend to introduce the Internet and computer networks into public administration actions (Azab et al., 2009; Chen et al., 2007; Heeks, 2004; Trkman and Turk, 2009; Chen et al., 2009; Basu, 2004; Heeks, 2003; Heeks and Santos, 2009; Ebbers and van Dijk, 2007). Many of these efforts have conceptualised the challenges and the success factors associated with e-service development in its different phases. This section will briefly discuss

these previous efforts with the purpose of examining and evaluating them, which leads to comprehending the contributions made towards governmental e-services. This review helped in the development of the proposed framework.

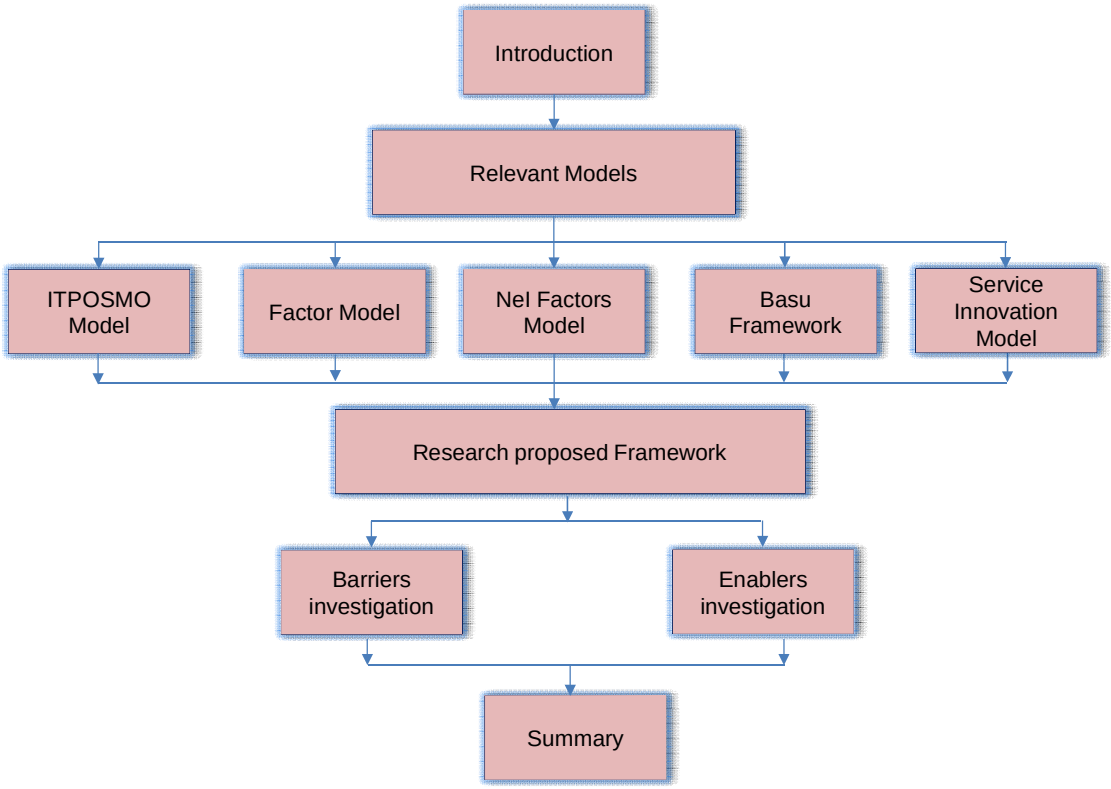


Figure 3.1: Outline of Chapter 3

- *ITPOSMO model:*

In response to the question, “Why do most e-government for development projects fail?” Heeks (2003) proposed the “ITPOSMO model”. He points out that there are high rates of failure of e-government projects in developing countries (35% are total failures, 50% are partial failures, and only 15% are successes). These failures come at a high price for poor countries. He identifies five categories of potential costs of e-government failure: direct financial costs, indirect financial costs, opportunity costs, political costs, and future costs. Consequently, he addresses the idea of a design-reality gap, or rather the gap that exists in an organisation between the conceptions of and public sector realities that determine success or failure in an information age reform. He

notes that the larger this design-reality gap, the greater the risk of e-government failure; the smaller the gap, the greater the chance of success.

His analysis of e-government projects indicates the seven dimensions – summarised by the ITPOSMO acronym – are necessary and sufficient to provide an understanding of design-reality gaps: Information, Technology, Processes, Objectives and values, Staffing and skills, Management systems and structures, Other resources: time and money. Putting these dimensions together with the notion of gaps produces the model for understanding success and failure of e-government as shown in Figure 3.2.

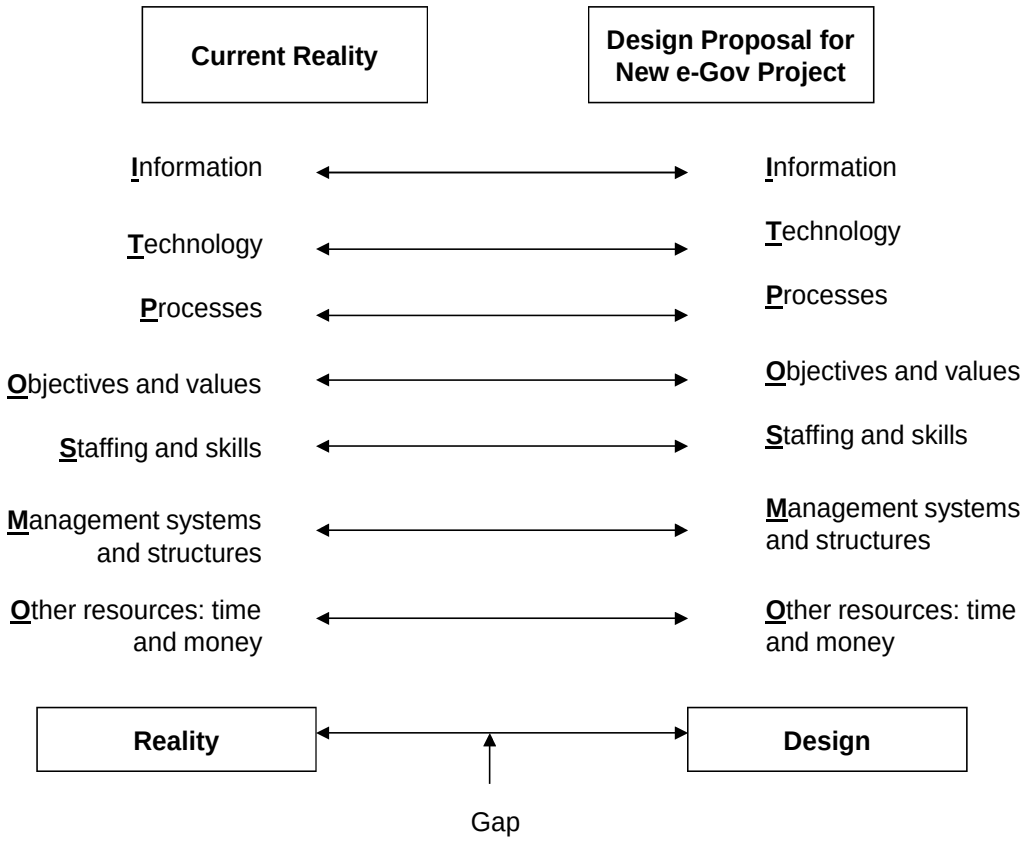


Figure 3.2: ITPOSMO Model for Understanding Success and Failure of E-government

Source: Heeks (2003)

- *Factor Model:*

Another effort is also related to the “Factor Model” proposed by Heeks (2004) to judge e-government success and failure. This model (shown in Figure 3.3) summarises the reasons behind success and failure of e-government projects. The Factor Model identifies a set of ten key factors: external pressure, internal political desire, overall vision and strategy, project management, change management, politics/self-interest, design, competencies, technological infrastructure, and other. The presence or absence of these factors will determine success or failure.

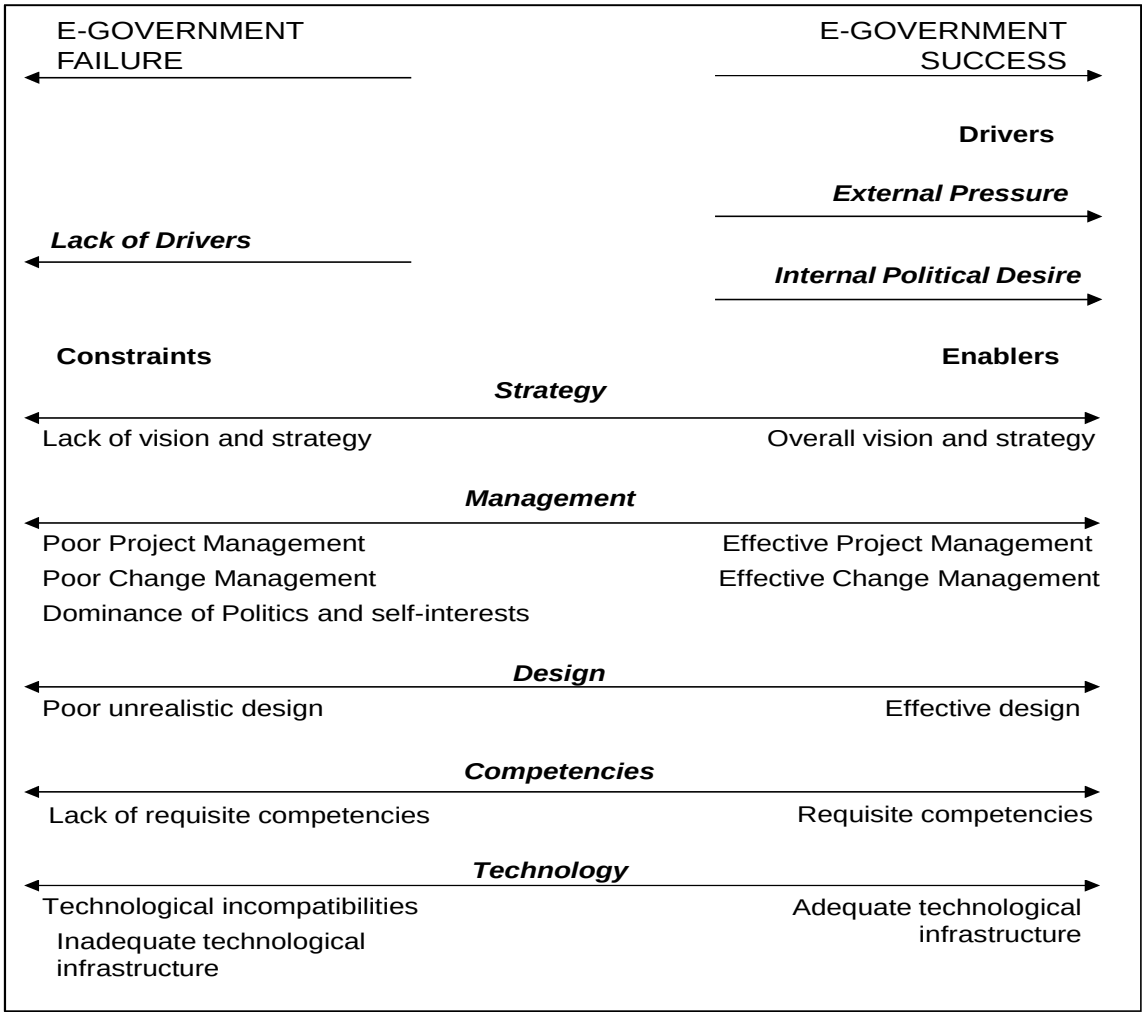


Figure 3.3: Factor Model for Success and Failure of E-government Projects

Source: Heeks (2004)

In addition, Heeks proposes an approach to make e-government projects more likely to succeed and/or less likely to fail, by listing and explaining some of the main factors that help support success/ or underlie the failure of e-government in developing/transitional countries. Left-pointing items in Figure 3.3 encourage failure; while right-pointing items encourage success.

- *National e-government Infrastructure (NeI) factors:*

Another paper of Chen et al. (2007) identifies critical success factors of electronic government and proposes an implementation framework. It compares between developed and developing countries in terms of implementing electronic government. The comparison is based on four key factors which are termed as National e-government Infrastructure (NeI) factors: Network Access, Network Learning, Network Economy, Network Policy; in addition to Culture Factors: National Culture, Organisational Culture, Social Norms (resistance to change); and Society Factors: History, Citizen, Governance, Organisational Structure, Politics and Information Availability.

A research framework has been proposed incorporating critical success factors (CSFs) that influence electronic government strategies and implementations, which can also be used to assess and guide the strategic development of electronic government implementation in developed and developing countries.

Chen et al. (2007) present an extensive case study to illustrate how the proposed framework can be used to analyse electronic government strategies in a developed country (US) and a developing country (China); then they make some recommendations for developed and developing countries for their implementation of e-government. The framework is shown in Figure 3.4.

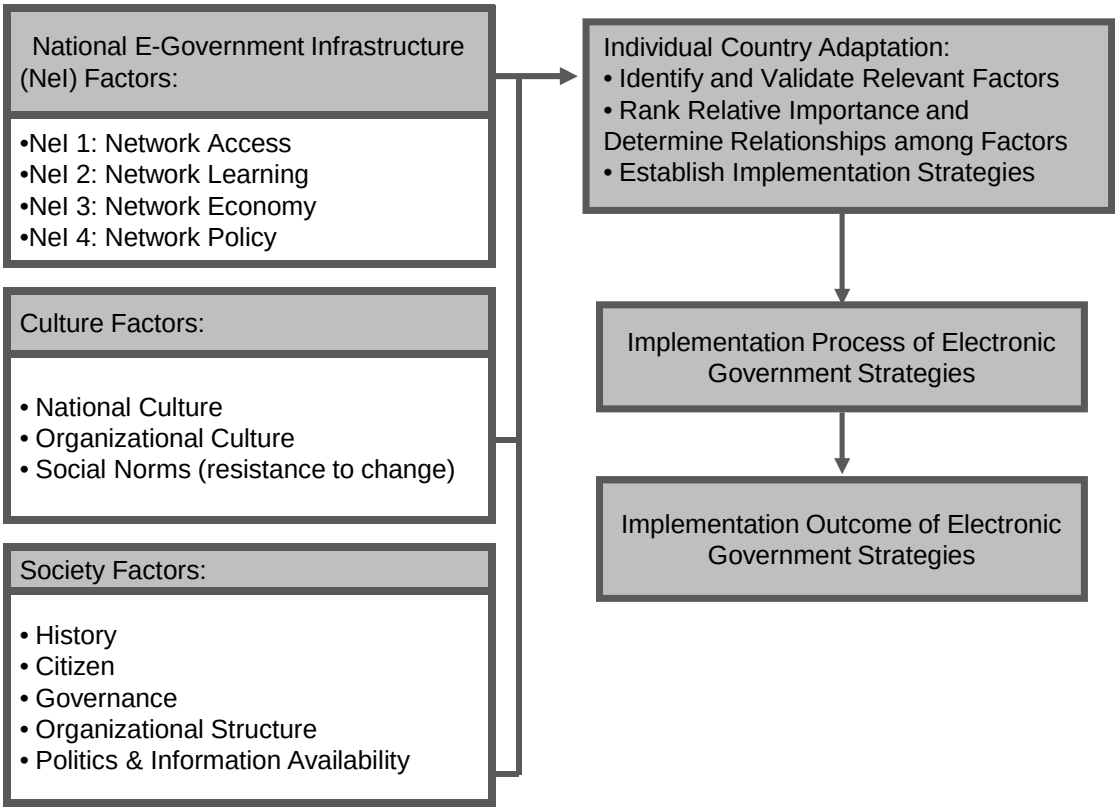


Figure 3.4: Critical Success Factors Framework

Source: Chen et al. (2007)

- *Basu* (2004) *Framework for developing countries*

In another attempt, Basu (2004) examines the legal and infrastructure issues related to e-governance from the perspective of developing countries. In particular, he examines how far the developing countries have been successful in providing a legal framework. The aim is to illuminate the increasing evolution, progress and promise of e-government in developing countries.

As regards the objective of e-government, a distinction is made between the objectives for internally focused processes (operations) and objectives for externally focused services. He identifies the external objective of e-government as fulfilling the public's needs and expectations satisfactorily on the front-office side, by simplifying the interaction with various online services. The use of ICT in government operations facilitates speedy, transparent, accountable, efficient and effective interaction with the public, citizens, business and other agencies.

Whereas, in the back-office, Basu recognises the internal objective of e-government in government operations as facilitating a speedy, transparent, accountable, efficient and effective process for performing government administration activities.

He also identifies some factors to be taken into account to examine the risk of implementing e-governance solutions such as: political stability, adequate legal framework, level of trust in government, importance of government identity, economic structure, government structure, different levels of maturity, and the constituent demand. In addition, he identifies some legal issues such as privacy, public access to information, authenticity, and political acceptance. He also supports guidelines for a proper and ideal legal framework for e-government operations in developing countries.

- *E-Government Services Innovation Model:*

In order to identify organisational processes of resistance and support to e-government innovations, Ebbers and Van Dijk (2007) proposed a multi-disciplinary and non-linear innovation model, shown in Figure 3.5. The proposed model grasps the whole process of innovation of e-government services: Gestation, Perception of urgency, Plan, Top management involvement, Adaptation of the innovation, Adapting policy, Clarification, Deploying financial resources and Deploying information systems. Presence or absence of each phase represents indicators of support for or resistance to e-government innovations. In this model, the authors try to solve four basic problems: the moment of adoption, merging development and implementation, non-linearity, and emphasising implementation.

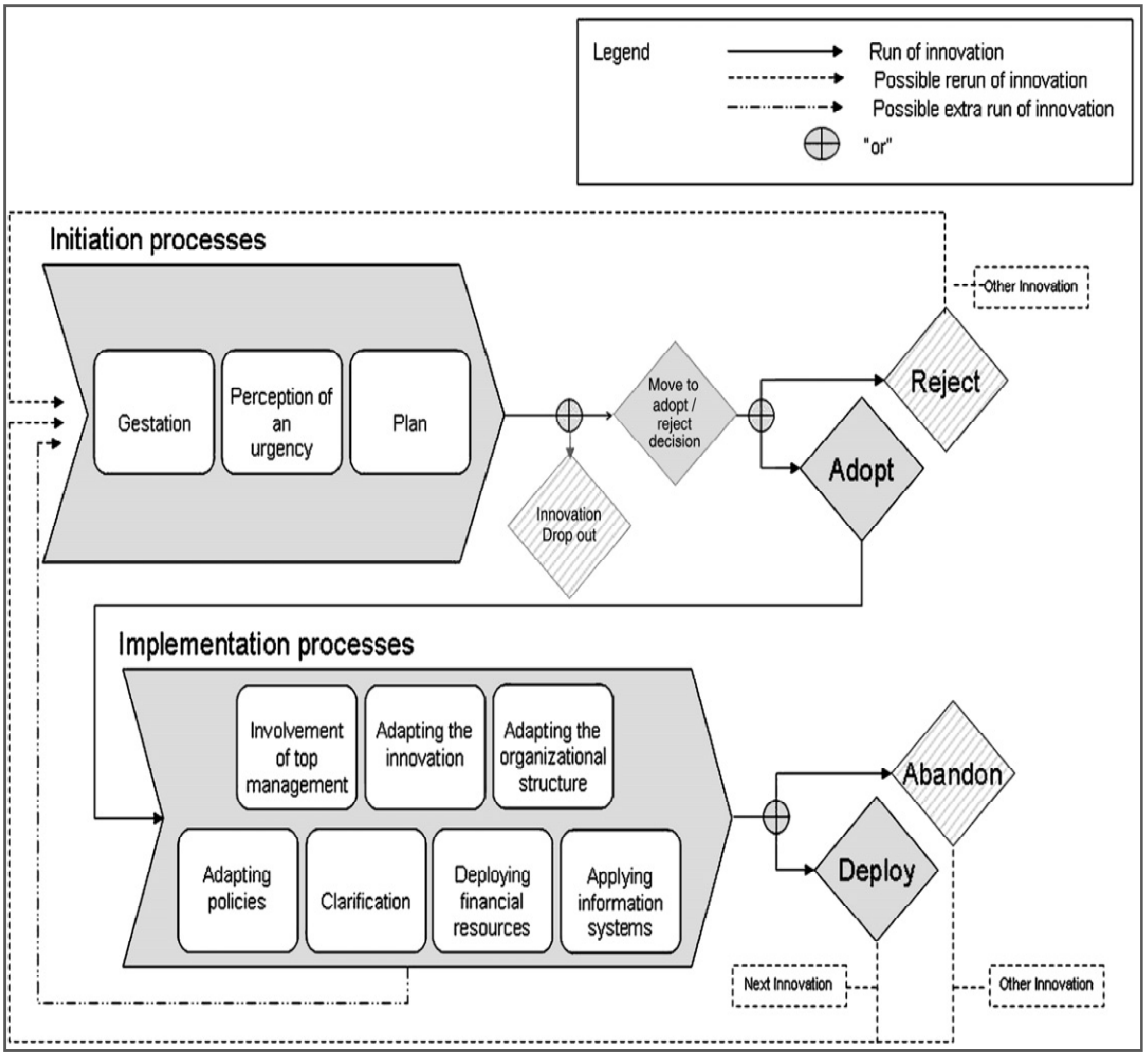


Figure 3.5: E-Government Services Innovation Model

Source: Ebbers and van Dijk (2007)

It is clear that all the above-mentioned efforts can be considered as useful guides to identify the major elements that affect the process of e-service development in governments. However, most e-government frameworks and implementation strategies in literature are based on the experiences of developed countries. Feeling the pressure and demand from citizens to provide electronic services online, many developing countries' governments have had no choice but to follow e-government development strategies proposed and carried out by developed countries (Hassan et al., 2008).

Therefore, there is a need to develop a framework which places emphasis on the e-service development process within the environment of a developing country's public sector which is at an early stage of its progress. Given the substantial differences in many key aspects of e-government related technological and social conditions between developed and developing countries, e-government development strategies and experiences from developed countries may not be directly applicable to developing countries.

3.3 Conceptual Framework of E-Service Implementation

Motivated by a desire to increase the chance of success of e-service projects in developing countries' governments, in this section, a conceptual framework has been proposed for identifying the main barriers and enablers for e-government development. The framework builds on prior literature in the area of e-service development in government organisations and makes use of the relevant previous frameworks to facilitate a better understanding of the nature of the e-service development process, in particular to identify barriers and success factors. The review and amalgamation of previous studies that have conceptualised the e-service challenges in the government sector facilitated the development of the proposed framework. Also, the framework is adapted from the efforts being undertaken in developing countries, which are at a basic stage of their progress, besides considering e-government lessons already learned in the world of developing countries.

Frameworks are useful because they allow us to organise and integrate the various elements of a problem in a simple and consistent way, assuring the attainment of the pursued outcomes. In addition, they allow holding a common work discipline (Montagna, 2005). Based on a literature review, the framework, as shown in Figure 3.6, summarises the factors that either facilitate or impede the e-service initiatives in the government context and target what e-government service should be in order to determine what steps need to be taken to reach that designated target.

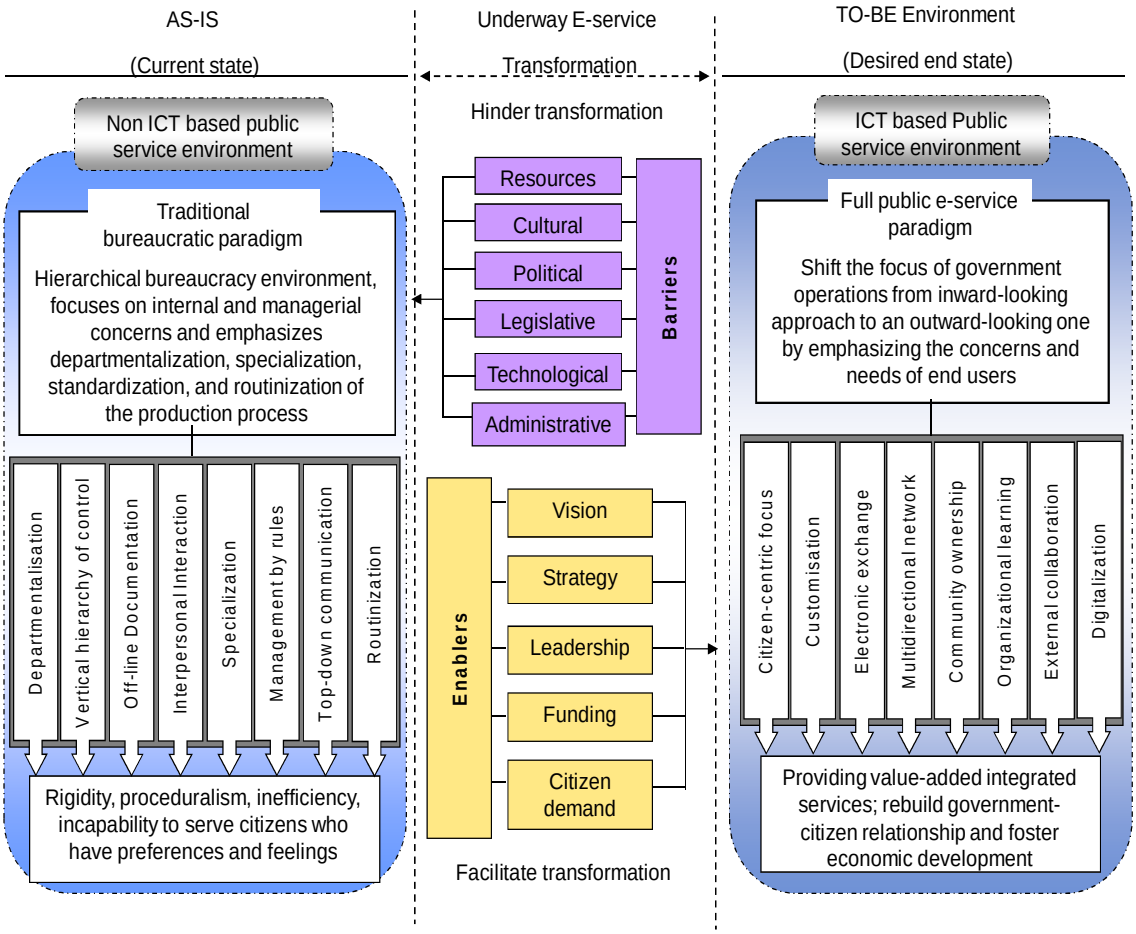


Figure 3.6: Proposed Framework Identifying Barriers and Enablers for Government E-service Development

The framework considers the e-service development process as a transformation from the traditional rigid context (which is the current state in many developing countries) to a full public e-service environment (desired end state) emphasising citizen-centric focus and digitalisation. Many authors, for example (Heeks, 2000; Lagzian, 2006; Misra and Dhingra, 2002) refer to this transition from a current non-IT government "where we are now" to an institutionalised e-government "where the e-government project wants to get us". While e-service transformation is on the move from the initial state to the desired state, a number of barriers hinder the e-service progress; however, a number of driving factors enable or facilitate it (are shown in section 3.3.3 and section 3.3.4).

3.3.1 AS-IS Phase

The AS-IS part of the framework (shown in Figure 3.6) represents the traditional rigid structure of the government, described by Ho (2002) as a hierarchical bureaucracy. This paradigm focuses on internal and managerial concerns and emphasises the division of administrative labour among persons and offices, specialisation, vertical hierarchy of control, standardisation, and routinisation of the production process. According to this government structure, employees who carry out related functions are placed in the same department. This structure is characterised by low cost communications and official transactions through the departmentalisation and routinisation. Also, this structure reduces the chances of fraud and carelessness, and ensures unbiased dealings with citizens. The hierarchical government defines lines of authority in a certain area of activity. Any action is taken on the basis of, and recorded in, written rules which are implemented by neutral officials. Finally, career advancement depends on technical qualifications judged by the organisation, not individuals

However, it is criticised for its rigidity, inactivity of procedures, rendering decision-making slow or even impossible when facing some unusual case, and similarly delaying change, evolution and the adaptation of old procedures to new circumstances. This type of government structure is also characterised by its proceduralism, inefficiency and over-specialisation, making individual officials unaware of the larger consequences of their actions. Bureaucracy can lead to the treatment of individual human beings as impersonal objects, not allowing them to use common sense, as everything must be done as is written by the law. As a result, the government is unable to serve human citizens who have preferences and feelings (Chen et al., 2007).

This type of bureaucratic government structure is considered to be a threat to individual freedoms (Ritzer, 2009). The structure traps employees in increased routinisation for their work scheme and locks them in a management by rule and mandate style, centralised and formal limited channels for external communications, and top-down and hierarchical internal communication.

3.3.2 TO-BE Phase

The designated target of the proposed framework (the TO-BE environment) is the full Information and Communication Technology (ICT) based government (Gottschalk, 2009; Ho, 2002; Bozeman, 1999; Huber and Shipan, 2002). ICT can promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information, and make government more accountable to citizens. This full e-public environment can deliver services via the Internet, telephone, community centres (self-service or facilitated by others), wireless devices or other communications systems. This paradigm is also characterised by emphasising the following:

- Citizen-centric focus, which pays attention to the concerns of citizens and provides services when and where they want them with greater flexibility and control.
- Community ownership principle, which empowers citizens to take ownership of community problems and urges officials to partner with citizen groups to identify solutions and deliver public services effectively.
- Service customisation and personalisation based on citizens' preferences and needs.
- Electronic exchange, where the Internet (besides using other electronic means) can create a seamless way of communication and interaction between citizens and officials, rather than face-to-face interaction. Citizens no longer need to know which departments are responsible for what.
- Multidirectional network, direct communication with internal employees, interdepartmental teamwork and information sharing.
- Innovation, organisational learning, facilitation and coordination among parties, and entrepreneurship so that government can continue to reinvent itself.

In the way of transformation from a bureaucratic environment to one in which citizens, public employees and officials embrace the promise and need for an electronically efficient paradigm, a number of barriers hinder the e-service progress, while another number of enablers facilitate it.

3.3.3 Barriers Investigation

As mentioned in Chapter Two, while reviewing the literature, a variety of elements that impede e-service development have been found. Those elements can be grouped into six major categories. However, many elements can fall under more than one category, depending on different perspectives.

1- Political barriers: These are related to the elements that may arise when someone or some group of political leaders has to make decisions and have the will to carry them out (Lagzian, 2006). These barriers may include: the lack of potential will and support, lack of vision and strategy, absence of an e-government champion, over-ambitious milestones, political unawareness, insufficient political involvement, and absence of detailed policy. This group of barriers can end the e-government initiative in the early stages. Political support and awareness is obviously the first cornerstone to fund and start implementing the e-government projects and give the appropriate shield to protect their continuity (Gottschalk, 2009; Schuppan, 2009).

2- Organisational/ Administrative Barriers: Government administrators have proved in some cases to be reluctant to introduce e-services. One main reason is the managerial and administrative issues of e-service deployment in the public sector (Vassilakis et al., 2005; Tseng et al., 2008; Andersen, 2006; Velsen et al., 2009). The development and deployment of electronic services incurs significant costs for hardware platforms, software development and licensing, employee hiring for electronic service administration and help desk operations. Managers may find it hard to justify these costs to citizens, especially when the service's target audience is small and/or it is doubtful whether the target audience will ultimately prefer the electronic version of the service to the traditional paper-based delivery channel (Vassilakis et al., 2005). Lack of methods for productivity and progress monitoring, and accountability – such as the lack of an indisputable authentication system – are considered to be some of the administrative barriers as well. In addition, there are some barriers related to the organisational structure and inter- and intra-relationships. These barriers may include complex issues that can arise as a result of poor

organisational infrastructure, complexity and poor project management, lack of coordination among organisations/ departments, conflicting priorities of organisations, old structure and processes, lack of e-service applications, lack of partner readiness and cooperation difficulty in the re-engineering of internal processes (Gottschalk, 2009; Chen et al., 2009; Schuppan, 2009).

3- Cultural Barriers: Are those associated with either organisational or social cultures, where attitudes, beliefs, values and behaviours learned by individuals themselves, or passed on to them by members of their social environment influence the implementation of e-government (Sharma and Gupta, 2003; AFFIRM, 2002). Examples may include: lack of awareness/ information, inactive citizens' participation, opposition by professional or union interests, e-literacy, multi-lingual/ multi-cultural issues, corruption, resistance to change by citizens, inappropriate cultural infrastructures, attitudes towards technology, and government's reluctance for citizens' involvement (Azab et al., 2009; Andersen, 2009; Gottschalk, 2009; Chen et al., 2009; Schuppan, 2009; Hamner and Al-Qahtani, 2009; Helbig et al., 2009; Hung et al., 2009). Some scholars believe that cultural barriers appear to be some of the biggest obstacles for e-service implementation (Reffat, 2003; Vassilakis et al., 2005; Hung et al., 2009). Some barriers may be ascribed to cultural or special characteristics of user communities. For example, specific citizen communities have a negative stance against e-services and would only see "traditional" paper-based service channels. In addition, e-service designs and implementations may not take into account the language or cultural background of the users. A service may be deployed only in the mostly spoken language within a country, thus excluding segments of the population. This can be a problem for countries with ethnic minorities or large numbers of immigrants. Finally, many citizens have a minimal understanding of how government processes are executed or decisions are made. This lack of awareness can prevent the citizen from actively participating in government services. Citizens and enterprises are not always informed regarding the Web addresses through which electronic services are available, or even whether an e-service exists at all.

4- Resources/ Economic/ Cost Barriers: e-government is sometimes hindered because of some shortage of resources. Human resources barriers include shortage of skilled qualified personnel at the technical and management levels, lack of professional expertise, and lack of e-government experience. Financial resources barriers generally refer to an insufficient budget for “e” initiatives and projects. In many cases, the annual appropriations process hinders the progress of multi-year e-government initiatives (AFFIRM, 2002). In addition, some authors argue that economic conditions, such as poverty and financial crisis, can affect and hinder e-government projects. It is argued that a large portion of the population in some countries with developing economies is unable to buy PCs and be connected to the Internet. These barriers can be classified under the cost barriers which also include the cost of developing e-government services, cost for government of providing services through multiple channels, high service user cost, and high technology set-up cost. As a result, this poverty-ridden environment is often not receptive to adopting technological innovations, like e-government.

5- Legislative Barriers: Are those related to the existence of appropriate laws, regulations and directives that allow or facilitate the deployment of electronic services such as laws concerned with privacy protection and the security of personal data (Gottschalk, 2009). They arise mainly from such issues as the lack of a suitable framework that addresses the submission of electronic documents, liability emerging from electronic documents, and the proven value of electronic documents over paper documents. For the proof-of-identity and the electronic document integrity, there does not currently exist a globally accepted framework for all services. Electronic signature technology is accepted in some countries and/or for specific services, but there exist countries and services classes for which electronic signatures are considered inadequate, e.g., services involving payments to citizens where fraud detection is important. In addition, legal issues, such as the requirement for physical presence, physical inspections, audits, and examinations, may hinder the transition to electronic services, since some manual processes will still remain in the workflow (Vassilakis et al., 2005).

6- Technological Barriers: These barriers are related to the lack of technology. Many e-services are based on the evolution of earlier public administration systems and ICT network infrastructures, which can create technical incompatibilities between systems within one administration. Other technological challenges include developing secure identification and authentication systems, poor infrastructure, lack of standards for quality, design of websites/portals, unreliable Internet connections and issues related to security and privacy (Hamner and Al-Qahtani, 2009; Schwester, 2009; Ebbers and van Dijk, 2007).

Technology is viewed in literature as a major bottleneck in the implementation and maintenance of e-service systems in the public sector (Gichoya, 2005; Ebrahim and Irani, 2005; Vassilakis et al., 2007; Helbig et al., 2009; Janssen et al., 2009). The focus of these studies is fixed on how governments deliver their services through the Web, while other potential electronic service delivery channels (e.g. WAP, I-mode, SMS, 3G phones, call centres) are not adequately considered in most studies. Studies report that Internet usage – either from home or from work – ranges from 77.4% in North America to 58.4% in Europe (on average), while the usage in Africa is only 10.9% and 29.8% in the Middle East (Internet Usage and World Population Statistics last updated on June 30, 2010). Minorities, the disabled and rural residents in many countries around the world still lag behind in their use of computers and speedier access to the Web. Limiting a service to this channel effectively excludes a large portion of the population. In addition, users sometimes perceive the Internet as being too slow and/or unreliable for their transactions with the government. This is true in the case of complex forms that must be downloaded and/or the large volumes of data that must be exchanged. Taking all previous technological problems from using the web into account, it seems reasonable that the research literature should have tried to either find solutions for these problems or pay greater attention to other delivery channels. Ebbers et al. (2008) tries to shift the focus from the web channel and explores how an alternative multichannel management strategy could improve the way governments and citizens interact.

3.3.4 Enablers Investigation

While barriers hinder the e-service progress; enablers motivate and encourage it. They cause stakeholders to support e-government (Lagzian, 2006). E-government projects must have driving forces if they are to succeed (Heeks, 2001). Therefore, they should be well identified and recognised.

In the previous chapter, many elements have been identified from literature as driving forces for successful implementation of e-government projects. The most important elements emphasised by literature are discussed as follows:

1. Vision: Planning for e-government service should begin by establishing a broad vision that flow from the large goals or concerns of the society. Citizens should also be included in the government e-service vision. The vision of the government should imply providing greater access to information, as well as better, more equal services and procedures for the public and businesses too. It should be developed for the government e-service initiative in different areas; for the administration, managing performance, by making strategic connections within government, creating empowerment, and improving government processes by cutting costs; for the citizens and services area, connecting citizens to government by talking to them and supporting accountability by listening to them and improving public services; finally, for the society, building interactions beyond the boundaries of government by working better with business, developing communities, building government relationships, and building civil society (Chen et al., 2009).

2. Strategy: To manage change resulting from introducing the e-service initiative, a specific plan of action should be developed first. A strategy should be included to motivate the organisation towards achievement of the e-service program goals. A good strategy needs to first assess the current condition as the first step to developing a path to the desired results. The strategic plan should also anticipate uncertainties such as technology, seeing it as the means not the end and integrating IT with broader reform objectives (Andersen, 2009; Heeks and Santos, 2009).

3. Leadership support: It is usual to consider leadership support as an enabler for public sector e-service development and success. This support lies behind all the motivational forces at every level of the government. Without strong political leadership, few e-service initiatives will be funded and implemented. E-service projects should be under the supervision of a specific minister who holds a Cabinet position in government. High-level leadership involvement is essential to ensure e-service project planning, to acquire the necessary resources, to motivate staff, to support dealings with external partners and stakeholders, and to ensure coordination across ministries and organisations.

4. Citizens' demand: This factor derives reform from outside government and exerts pressure for change. When there is a high level of citizens' expectations from the government, it will be a powerful driving force for e-service projects planning and implementation. It is a motivation for the government to implement an e-service project when there is citizens' demand and pressure for it (Helbig et al., 2009).

5. Funding: In order to implement an e-service project, the government needs to understand what resources are available to be devoted to achieve the project's reasonable and attainable goals. The availability of sufficient funding is a significant factor for a public organisation to move towards e-service success. The financial savings to governments through implementation of e-services will only occur in the medium to long term. Hence, the initial start-up cost of the initiative will be high and will add to the costs of government administration. Governments with slack funding can afford costly innovations, absorb failure, and explore new ideas in advance of the actual needs.

3.4 Chapter Summary

Researchers and practitioners have long held an interest in digitisation in the government context. However, it is clear that there are significant difficulties that are hard to be overcome before the benefits of an e-government service transformation can be enjoyed, especially in developing countries.

In this chapter, many efforts that have conceptualised these difficulties, in addition to the success factors associated with the e-service development in its different phases, have been reviewed. The models reviewed were useful guides to identify the major elements that affect the process of e-service development in governments. However, many were based on the experiences of developed countries, although, understanding the contributions made through these efforts has helped in the development of the proposed e-service framework.

By placing special emphasis on the developing countries context, this chapter achieved the purpose of proposing an initial conceptual framework which aimed to contribute to the explicit understanding of e-service development in the government context, and explained the main barriers and enablers along the process. This means that the framework has the capability to examine the challenges related to current government, along with the challenges of subsequent stages of e-government development. This feature makes it more practical to apply to societies with traditional, bureaucratic systems. The framework can be used as a descriptive tool to organise and analyse the factors affecting e-service implementation in governments. It adds to the knowledge of the phases through which the e-service initiative is conducted and carried out.

4 CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

In the introductory chapter, the fundamental research issues have been outlined, along with a general overview of the research question, aim and objectives. The relevant literature has been examined in Chapter Two and provided a better understanding, leading to the conceptual framework proposed in Chapter Three.

Therefore, the purpose of this chapter is to:

Provide the rationale towards selecting a suitable research strategy and outline the research methodology that has been followed to ensure that its design is appropriate to provide the answer to the research question and achieve its aim and objectives.

There are six parts in this chapter, as illustrated in Figure 4.1. After the introduction, an overview of the research methods has been provided in section 4.2. This includes an overview of the different philosophical paradigms, research approaches, and different tools for collecting the required information. The same section also addresses why the chosen research methods fit this study. Since philosophical perspectives influence the logic of inquiry or research strategy, the research strategy adopted in this study is explained in section 4.3, where the usefulness of the constructionism paradigm, the qualitative approach, case study method and the interview technique are justified for the purposes of this thesis. Section 4.4 discusses the important criteria for evaluating academic research: Reliability and Validity. The chapter concludes with a summary.

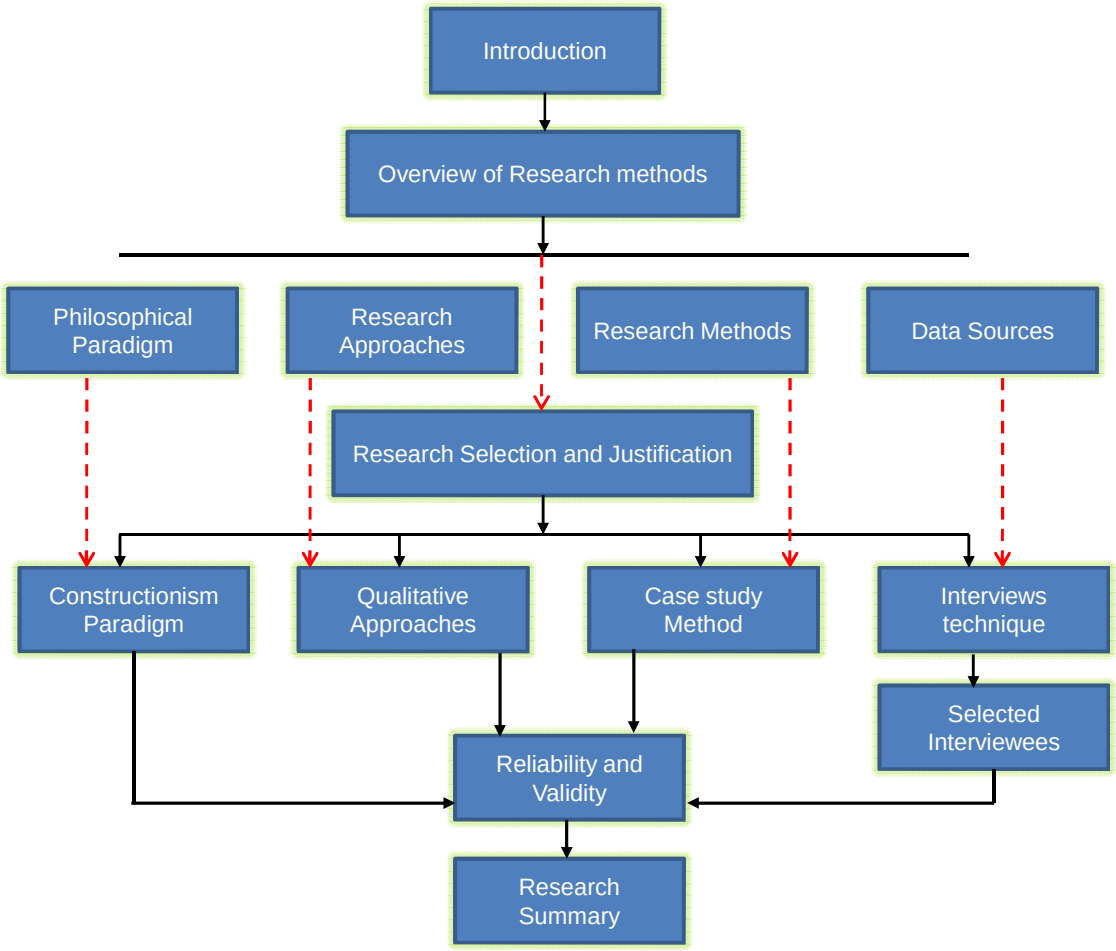


Figure 4.1: Outline of Chapter 4

4.2 Overview of Research Methods

4.2.1 Philosophical Paradigms of Research

According to Easterby-Smith et al. (2002), the main philosophical positions underlie the designs of management research. In other words, the philosophical factors affect the overall arrangements which enable satisfactory outcomes from research. A paradigm is a set of shared assumptions or ways of thinking about some aspects of the world. Different philosophical paradigms have different views about assumptions that we make about the nature of the world or reality (ontology) and the set of assumptions about the best ways we can acquire knowledge about it (epistemology) (Oates, 2006). There are many arguments and debates on the progress of philosophy. However, it is important to

understand each side of the argument because research problems often require compromise designs which draw from more than one tradition (Easterby-Smith et al., 2002). Generally, there are two major research philosophical paradigms in social sciences which are: positivism and social constructionism (interpretive). Some authors also added a third paradigm (critical) for research in Information Systems (IS) (Oates, 2006; Klein and Myers, 1999).

Positivism: sometimes called the scientific method. It is the oldest of the three paradigms (Oates, 2006). The key idea of positivism is that the social world exists externally, and that its properties should be measured through objective methods, rather than being inferred subjectively through sensation, reflection or intuition (Easterby-Smith et al., 2002). In relation to ontology, positivists believe that reality is separate from the individual who observes it. They apparently consider subject (the researcher) and object (the phenomena in the world that are their focus) to be two separate, independent things (Weber, 2004). In addition, positivists have an epistemological assumption that knowledge of a reality exists beyond the human mind. They apparently believe that human experience of the world reflects an objective, independent reality and that this reality provides the foundation of human knowledge (Klein and Myers, 1999; Weber, 2004).

A number of other assumptions can be made from the positivism paradigm. These include (Easterby-Smith et al., 2002; Weber, 2004; Lowery and Evans, 2004):

- The use of laboratory and field experiments and surveys as the preferred research methods;
- The statement made by a researcher is true when it has one-to-one mapping to the reality that exists beyond the human mind;
- The research is reliable only if results can be replicated by the researcher herself/himself and other researchers;

- Science proceeds through a process of hypothesising fundamental laws and then deducting what kinds of observations will demonstrate the truth or falsity of these hypotheses.

Social Constructionism: also referred to as interpretive, attempts to understand and interpret how people create and maintain their social worlds. It assumes that reality is not objective and exterior, but is socially constructed and given meaning by people (the ontology assumption that reality and the individual who observes it cannot be separated) (Weber, 2004). The access to reality is only through sharing experiences with others via social constructions (interpretations) such as language, consciousness and shared meanings (Easterby-Smith et al., 2002). In other words, social constructionist studies generally attempt to understand phenomena through the meanings that people attribute to them. The aim of interpretive research is to improve our understanding of human thought and action through interpretation of human actions in their real life (the epistemology assumption that knowledge is built through social construction of the world) (Klein and Myers, 1999). Hence, the focus should be on what people, individually and collectively, are thinking and feeling; attention should be paid to the ways they communicate with each other, whether verbally or non-verbally. One should try to understand and explain why people have different experiences, rather than search for external causes and fundamental laws to explain their behaviour. In addition to their belief that the qualities they ascribe to the objects they research are socially constructed, interpretivists tend to use case studies, ethnographic studies, phenomenographic studies and ethnomethodological studies as their preferred research methods (Weber, 2004). In relation to validity in interpretive research, interpretivists are concerned that their claims about the knowledge they have acquired via their research are defensible. Colleagues do not necessarily have to agree with the claims, but they should be willing to concede that the researcher's conclusions are plausible, at least from the perspective of the researcher.

Many studies have conducted comparisons between the implications of Positivism and Social Constructionism. One of the famous comparisons is the one by Easterby-Smith et al. (2002) which represents a composite picture rather than the viewpoint of a single author. The comparison is shown in Table 4.1:

Table 4.1: Contrasting implications of Positivism and Social Constructionism

	Positivism	**Social Constructionism**
The observer	must be independent	is a part of what is being observed
Human interests	should be irrelevant	are the main drivers of science
Explanations	must demonstrate causality	aim to increase general understanding of the situation
Research progress through	hypotheses and deductions	gathering rich data from which ideas are induced
Concepts	need to be operationalised so that they can be measured	should incorporate stakeholder perspectives
Units of analysis	should be reduced to simplest terms	may include the complexity of whole situations
Generalisation through	statistical probability	theoretical abstraction
Sampling requires	large numbers selected randomly	small numbers of cases chosen for specific reasons

The differences between positivist and interpretive research approaches were conducted by Weber (2004). The differences are shown in Table 4.2:

Table 4.2: Differences between Positivist and Interpretive research approaches

Metatheoritical Assumptions About	Positivism	Interpretivism
Ontology	Person (researcher) and reality are separate.	Person (researcher) and reality are inseparable (life-world).
Epistemology	Objective reality exists beyond the human mind.	Knowledge of the world is intentionally constituted through a person's lived experience.
Research Object	Research object has inherent qualities that exist independently of the researcher.	Research object is interpreted in the light of meaning structure of a person's (researcher's) lived experience.
Method	Statistics, content analysis.	Hermeneutics, phenomenology, etc.
Theory of Truth	Correspondence theory of truth: one-to-one mapping between research statements and reality.	Truth as intentional fulfilment: interpretations of research object match lived experience of object.
Validity	Certainty: data truly measure reality.	Defensible knowledge claims.
Reliablity	Replicability: research results can be reproduced.	Interpretive awareness: researchers recognise and address implications of their subjectivity.

Critical: Klein and Myers (1999) claim that research can be classified as critical if the main task is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light. Researchers in the critical paradigm assume that social reality is historically constituted and that it is produced and reproduced by people (Myers and Avison, 2002). Critical research seeks to be emancipatory in that it aims to help eliminate the causes

of unwarranted alienation and domination and thereby enhance the opportunities for realising human potential. To make this possible, critical theorists assume that people can consciously act to change their social and economic conditions. However, they do recognise that human ability to improve their conditions is constrained by various forms of social, cultural, and political domination as well as natural laws and resource limitations.

4.2.2 Research Approaches

A research approach is a discipline within which knowledge is acquired by different research methods. The two commonest approaches to research design are quantitative and qualitative (Myers and Avison, 2002).

Quantitative research methods were originally developed in the natural sciences to study natural phenomena. A quantitative approach always involves the numerical analysis of data and places emphasis on the measurement and analysis of causal relationships between variables (Johnson and Harris, 2002). A typical characteristic of quantitative research is the use of a controlled environment, where the researcher has both the environment and the experimental conditions under control, and is 'detached' so that the influence is minimised on the research findings (Robson, 2002). This highlights an important feature of quantitative techniques, which is that the process of data collection is distinct from the analysis (Easterby-Smith et al., 2002). Examples of quantitative methods include survey methods, laboratory experiments, formal methods and numerical methods such as mathematical modelling (Myers and Avison, 2002).

Qualitative research methods were developed in the social sciences to enable researchers to study social and cultural phenomena. The word qualitative implies an emphasis on the quality of entities and on processes and meanings that are not experimentally examined or measured in terms of quantity, amount, intensity or frequency. Qualitative techniques are defined as 'an array of interpretative techniques which seeks to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world (Van, 1983). In

qualitative research, the data are collected in the format of words and observations, rather than in a numerical format. A qualitative approach is chosen when the phenomena of interest typically require an exploration of detailed in-depth data as qualitative methods stress the values of rich descriptions of the social world (Johnson and Harris, 2002; Robson, 2002). As opposed to the controlled environment of the quantitative approach, the researcher here conducts the study in a 'natural setting'. Qualitative sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher's impressions and reactions (Myers and Avison, 2002). Qualitative research is perceived to be any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification.

It is not likely to undertake qualitative and quantitative research at the same time; however, it is possible for a study to be divided into various phases, where either qualitative or quantitative approaches can be applied. A major difference between qualitative and quantitative research is that researchers adopting the first approach rely on a few variables and many cases, whereas researchers adopting the second approach work with many variables and a few cases. For this reason, it is hard to follow a quantitative patterned approach in the study of a social or natural setting, since there are many variables that are out of the researcher's control.

4.2.3 Qualitative Research Strategies

Qualitative research may be conducted in dozens of ways (Miles and Huberman, 1994). Many thoughtful efforts have explained a whole range of research strategies within the qualitative research context, with different criteria behind each effort for this classification. For example, Wolcott (1992) proposed a whole tree of two dozen strategies organised according to preferred styles of collecting data. His classification turns around methods. Tesch (1990) sorts 27 types of qualitative research according to three major substantive questions: What are the characteristics of language itself? Can we discover regulatories in

human experiences? Can we comprehend the meaning of a text or action? This classification is based on research purposes.

Creswell (1998) concludes there are five qualitative design research strategies: *biography, phenomenology, grounded theory, ethnography*, and *case study*. Table 4.3 illustrates his comparison of the five strategies.

Table 4.3: Comparison of five research strategies

	Biography	Phenomenology	Grounded Theory	Ethnography	Case study
Focus	Exploration of an individual's life	Understanding of a phenomenon's experiences	Development of a theory grounded in data from the field	Description and interpretation of a cultural and social group	Development of a comprehensive analysis of a single case or multiple cases
Discipline origin	Anthropology, Literature, History, Sociology, Psychology	Philosophy, Sociology, Psychology	Sociology	Cultural, Anthropology, Sociology	Political Sciences, Sociology, Urban studies, other Social Sciences
Data collection	Mainly interviews and documents	Long interviews with up to 10 people	Interviews with 20-30 individuals to 'saturate' categories and detail a theory	Mainly observations and interviews with additional artefacts during long time spent in the field	Various sources– documents, archival records, interviews, observations, physical artefacts
Data analysis	Stories, Epiphanies, Historical content	Statements, Meanings, Meaning themes	Open Coding, Axial Coding, Selective Coding, Conditional Matrix	Description, Analysis, Interpretation	Description, Themes, Assertions
Narrative form	Thorough illustration of an individual's life	Description of the 'essence' of the experience	Theory or theoretical model	Description of the cultural group behaviour	In-depth study of a single 'case' or multiple 'cases'

Likewise, Robson (2002) categorised the acceptable strategies for qualitative inquiries into *case study, ethnographic study,* and *grounded theory study;* these are described in Table 4.4.

Table 4.4: Robson's three qualitative research strategies

Qualitative Research Strategy	Definition	Typical Features
Case study	Detailed, intensive knowledge development about a single case, or a small number of related cases.	▪ Single case selection ▪ Study of the case within its context ▪ Use of various data collection techniques, such as observation and interviews.
Ethnographic study	Aims to capture, analyse, and explain how a group, organisation or community live and experience the world.	▪ Selection of a group, organisation and community ▪ Researcher involvement in the setting ▪ Use of observation.
Grounded theory study	Aims to generate theory based on the data collected from the study.	▪ Applicable to a broad range of phenomena ▪ Mainly interview-based ▪ Provides comprehensive recommendations for data analysis and theory generation.

The Case Study as a Research Strategy:

Yin (1994) defines case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. The case study copes with the technically distinctive situation in which there will be many more variables of interest than data points, as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and another result benefits from the prior development of theoretical propositions to guide data collection and analysis.” Case studies usually combine data collection methods, including archives, interviews, questionnaires, and observations. The evidence may be qualitative (e.g., words), quantitative

(e.g., numbers) or both (Eisenhardt, 1989). Case studies can be used to accomplish various aims: to provide description, test theory, or generate theory.

Benbasat et al. (1987) summarised a list of eleven characteristics of case studies as follows:

Key Characteristics of case studies

1. Phenomenon is examined in a natural setting.
2. Data are collected by multiple means.
3. One or few entities (person, group, or organisation) are examined.
4. The complexity of the unit is studied intensively.
5. Case studies are more suitable for the exploration, classification and hypothesis development stages of the knowledge building process; the investigator should have a receptive attitude towards exploration.
6. No experimental controls or manipulation are involved.
7. The investigator may not specify the set of independent and dependent variables in advance.
8. The results derived depend heavily on the integrative powers of the investigator.
9. Changes in site selection and data collection methods could take place as the investigator develops new hypotheses.
10. Case research is useful in the study of "why" and "how" questions because these deal with operational links to be traced over time rather than with frequency or incidence.
11. The focus is on contemporary events.

There are many differences between case studies and other research strategies. For example, the experiment manipulates instances, whereas the case study does not. An experiment is a study in which one or more variable characteristics of an object of study are manipulated in one or multiple instances of the object of study and in which scores obtained in the experimental instance or instances are analysed (Dul and Hak, 2008). Also, the case study and survey are different in two aspects: the number of instances from which the data are collected for the analysis, and the method of data analysis. The case study draws conclusions on the basis of a qualitative analysis from a single case study or comparative case studies, whereas the survey draws conclusions on the basis of the quantitative (statistical) analysis of

data from a population with a large number of instances (Benbasat et al., 1987; Dul and Hak, 2008).

Case studies can be single or multiple case designs. The single-case design is justifiable when the case represents a critical test of existing theory, when the case is a rare or unique event, or when the case serves a revelatory purpose (Yin, 1994). Also, single-case study projects are most useful at the outset of theory generation and late in theory testing. A single case used for exploration may be followed by a multiple-case study (Benbasat et al., 1987).

Multiple-case designs are desirable when the intent of the research is description, theory building, or theory testing. Multiple-case designs allow for cross-case analysis and the extension of theory as they can be used to compare the similarities and differences between cases. Multiple-case studies follow replication logic, meaning that cases are selected for theoretical not statistical reasons. The goal of theoretical and literal sampling is to choose cases which are likely to replicate, extend or violate the emergent theory (Eisenhardt, 1989).

Multiple-case designs have distinct advantages and disadvantages in comparison with single-case designs. Of course, multiple-cases yield more general research results. Therefore, the findings are regarded as more compelling and the overall study is regarded as being more robust than that of a single case study (Herriot and Firestone, 1983). At the same time, the rationale for single-case designs usually cannot be satisfied by multiple-cases. Moreover, the conduct of a multiple-case study can require extensive resources and time beyond the means of a single student or independent research investigator (Yin, 1994).

Multiple-case studies follow replication logic. According to Yin (1994) this means that multiple cases are selected to either predict similar results (literal replication) or to produce contrasting results but for predictable reasons (theoretical replication). An important step in all replication procedures is the development of a rich, theoretical framework. The framework needs to state the

conditions under which a particular phenomenon is likely to be found (a literal replication) as well as the conditions when it is not likely to be found (a theoretical replication). Yin's replication logic is illustrated in Figure 4.2.

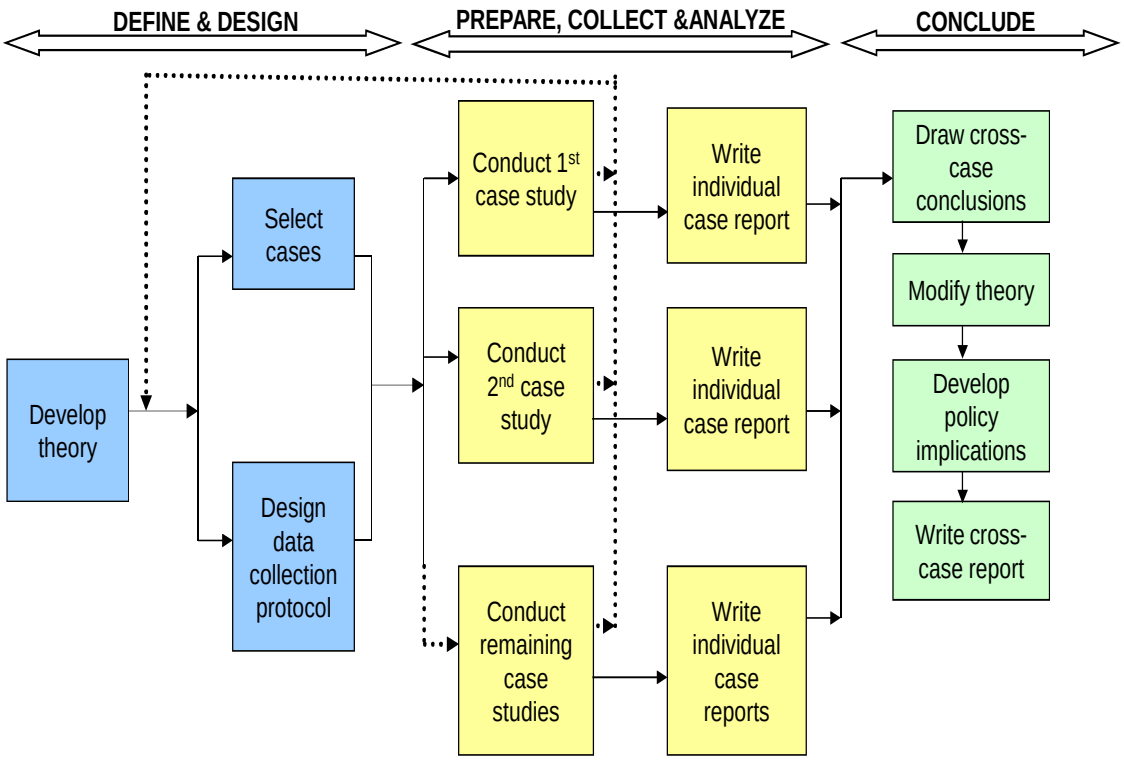


Figure 4.2: The Replication Approach to Multiple-case Studies

4.2.4 Data Sources

Multiple data collection methods are typically employed in case research studies. Ideally, evidence from two or more sources will converge to support the research findings (Benbasat et al., 1987). Yin (1994) identifies several sources of evidence that work well in case research:

1. Documentation— written material which takes many forms ranging from memoranda, agendas, minutes of meetings, administrative documents, formal studies and newspaper clippings.
2. Archival records— these can be service records such as those showing the number of clients served over a given period of time; organisational

records such as organisation charts; maps and charts, survey data and personnel or financial records.

3. Interviews— these may be open-ended or focused.
4. Direct observation— absorbing and noting details, actions, or subtleties in a field environment.
5. Participant observation— special mode of observation in which the researcher is not merely a passive observer. Instead a variety of roles are assumed within a case study situation and the researcher may participate in the events being studied.
6. Physical artefacts— a technological device, tool or instrument, a work of art, or some other physical evidence.

Specific data to be collected will depend on the research questions and the unit of analysis. Prior to site visits, the researcher should outline, in detail, the data to be gathered (Benbasat et al., 1987). This may include a list of materials to be collected (documentation, archival records and physical artefacts) as well as questions for interviews and plans for direct observation. This formalisation helps coordination when multiple investigators work together. It also provides some separation of data collection from data analysis. The goals of this planning should be to ensure good coverage of the research questions and excellent use of time spent on-site. This planning stage helps to structure projects that are inherently flexible. It gives the researcher a guide from which to work. As the project unfolds, the plan will be revised according to the researcher's judgement, unexpected observations, or limitations and opportunities.

No single source has a complete advantage over all the others. In fact, the various sources are highly complementary, and a good case study will therefore want to use as many sources as possible. Yin’s (1994) overview of the six major sources considers their comparative strengths and weaknesses, shown in Table 4.5.

Table 4.5: Six sources of evidence: Strengths and Weaknesses

Source of Evidence	Strengths	Weaknesses
Documentation	• Stable: can be reviewed repeatedly • Unobtrusive: not created as a result of the case study • Exact: contains exact names, references, and details of an event • Broad coverage: long span of time, many events, and many settings	• Retrievability: can be low • Biased selectivity, if collection is incomplete • Reporting bias: reflects (unknown) bias of author • Access: may be deliberately blocked
Archival Records	• Same as above for documentation • Precise and quantitative	• Same as above for documentation • Accessibility due to privacy reasons
Interviews	• Targeted: focuses directly on case study topic • Insightful: provides perceived casual inferences	• Bias due to poorly constructed questions • Response bias • Inaccuracies due to poor recall • Reflexivity: interviewee gives what interviewer wants to hear
Direct Observations	• Reality: covers events in real time • Contextual: covers context of event	• Time-consuming • Selectivity: unless broad coverage • Reflexivity: event may proceed differently because it is being observed • Cost: hours needed by observers
Participant Observation	• Same as above for observations • Insightful into interpersonal behaviour and motives	• Same as above for observations • Bias due to investigator's manipulation of events
Physical Artefacts	• Insightful into cultural features • Insightful into technical operations	• Selectivity • Availability

The most fundamental of all qualitative methods is that of interviewing, among the range of other instruments which provide useful methods and help to generate insights into how respondents see their world (Easterby-Smith et al., 2002; Bryman, 2008).

Interviews are considered as one of the most important sources of case study data collection. With regard to interpretive case studies where the researcher plays a role as an outside observer, interviews are the primary data source (Walsham, 1995). This is because it is through this method that the researcher can best access the views that participants have regarding actions and events which have or are taking place, along with the views and aspirations (which they have) of themselves and other participants.

Qualitative interviews may take several forms. Most commonly, case study interviews are of an open-ended nature (unstructured interviews), in which the researcher can ask key respondents for the facts of a matter as well as for the respondents' opinions about events. A second type of interview is a focused interview (semi-structured interview), in which a respondent is interviewed for a short period of time and the researcher is more likely to be following a certain set of questions derived from the case study protocol. They are conducted on the basis of loose structure consisting of open ended questions that define the area to be explored, at least initially, and from which the interviewer and the interviewee may diverge in order to pursue an idea in more detail. A third type of interview (called structured interview) entails more structured questions, along the lines of a formal survey. Such a survey could be designed as part of a case study.

4.3 Research Methods Selection and Justification

4.3.1 The Rationale of the Constructionism Paradigm

This study adopts the Social Constructionism paradigm. The researcher assumes that understanding the e-government phenomenon through the ways that people make sense of it is an appropriate method, specially through sharing their experiences via the medium of language as Easterby-Smith (2002) suggests. The research is interpretive in nature since the author is interested in understanding barriers and enablers for e-service development in the Egyptian government by interpreting perceptions and human factors. This is compatible with the interpretive approach as it conveys realities about the social world in

which we live; and that, of course, is the nature of all good research involving social phenomena (Lowery and Evans, 2004). Therefore, it is assumed that our knowledge of reality is gained through social constructions such as language, consciousness, shared meaning, documents tools and other artefacts (Klein and Myers, 1999). Using the Social Constructionism paradigm allows the researcher to increase the understanding of the social and organisational issues related to development and implementation of e-service in governmental organisations.

4.3.2 The Rationale of the Qualitative Approach

A number of factors led to the adoption of a qualitative approach in this study. Firstly, the overall topic calls for further exploration, in order to create ideas and meet the research objectives.

Secondly, the topic needs to be studied in depth by using individuals in their natural setting and not in a controlled environment (Miles and Huberman, 1994) so that the study reaches what the phenomenon “real life” is like. A qualitative approach is well suited for this study as it enables the researcher to perceive events, to some extent at least, from the perspective of the insider and gives a strong sense of context, and potentially important factors that may impact on the research findings (Bryman, 1989). The study wants to take advantage of the fact that the data are collected in close proximity to the specific situation studied, rather than through the mail or over the phone. The emphasis is on a specific case, a focused and bounded phenomenon embedded in its context.

Thirdly, since the study tries to gain a full understanding of the e-service phenomenon in the government context, the ability of qualitative data to provide broader and richer descriptions is a reason to choose the qualitative approach. The richness and holism features of qualitative data provide “thick” descriptions that are vivid, nested in a real context, and have a ring of truth that has a strong impact on the actuality of the study (Miles and Huberman, 1994).

Fourthly, the study focuses on the social, organisational, and cultural concerns of e-service development rather than technical concerns. Therefore, in order to

realise a phenomenon of this nature, it is necessary to study the situation in its reality and cultural perspective. A qualitative approach is recognised as a proper way to study social topics. With its emphasis on people's lived experiences, qualitative approaches are fundamentally well suited for locating meanings people place on the events, processes, and structures of their lives and for connecting those meanings to the social world around them.

Finally, although it has been more than a decade since the e-service phenomenon was first studied, still little is known about its nature or scope in the Egyptian government context. A qualitative approach can be used to further understand any phenomenon about which little is yet known. It can also be used to gain new perspectives on things about which much is already known or to gain more in-depth information that may be difficult to convey quantitatively.

4.3.3 The Rationale of the Case Study Method

Four questions must be asked to determine whether the case method is a useful approach and to judge the appropriateness of the case strategy (Benbasat et al., 1987):

1. Can the phenomenon of interest be studied outside its natural setting?
2. Must the study focus on contemporary events?
3. Is control or manipulation of subjects or events necessary?
4. Does the phenomenon of interest enjoy an established theoretical base?

Comparing the different research methods, the case study method seems to be the most suitable one. A number of reasons contribute to this belief:

First, the implementation of e-service, particularly in Egypt, is a relatively new phenomenon and there is no strong theoretical base for the research. Case research is particularly appropriate for this type of problem in which research and theory are at their early stages of formulation, and for sticky, practice-based problems where the experiences of the actors are important and the context of action is critical (Benbasat et al., 1987). It is also appropriate to research an area in which few previous studies have been carried out to understand the

nature and complexity of the processes taking place (Yin, 1994). With the rapid pace of change in the IS field, many new topics emerge each year for which valuable insights can be gained through the use of case research.

Second, this study examines a number of e-service projects led by the Egyptian government for the purpose of underlining the key benefits resulting from these projects, explaining the strategies and the development steps used to implement them, and highlighting the main obstacles encountered and how they were overcome to help repeat the experience in other successful and widespread e-government projects. Benbasat et al. (1987) believe that the case research strategy is well suited to capturing the knowledge of practitioners and developing theories from it. The trial and error process in which practitioners are engaged is necessary for knowledge to be accumulated. It is incumbent upon scientists to formalise this knowledge and proceed to a testing stage. Before this formalisation takes place, case studies could be employed to document the experiences of practice.

Third, since the nature of this study is exploratory, case studies are suitable (Robson, 2002). The research questions are mostly “how” and “why” questions which are more explanatory and likely to lead to the use of case studies as the preferred research method. The case method allows the researcher to answer the "how" and "why" questions, i.e., to understand the nature and complexity of the processes taking place (Benbasat et al., 1987).

Fourth, the use of a case study is also suitable for the purposes of this study, because the study addresses the contemporary phenomenon of e-service development and implementation, over which the researcher has no control. As the research is examining existing experience without any trial of influencing any of the factors or behaviours, the case study is preferred as it is suitable in examining contemporary sets of events and when the relevant behaviours cannot be manipulated (Yin, 1994; Benbasat et al., 1987).

Finally, the use of a case study claims to offer a richness and depth of information not usually offered by other methods. This is required if the research objectives are to be met.

The holistic multiple-case designs (shown in Figure 4.3) are used in this study rather than single-case designs for cross-case analysis and the extension of theory. Of course, multiple-cases yield more general research results, and ensure that the events and processes in one well-described setting are not wholly idiosyncratic. They have more compelling evidence and therefore the overall study can be regarded as being more robust. The multiple-cases will include four projects from different governmental ministries that have implemented the e-service.

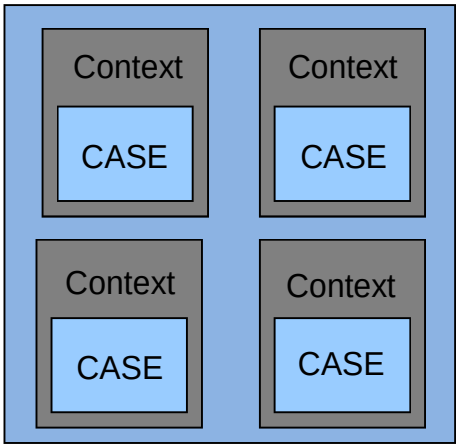


Figure 4.3: Holistic Multiple-case Design

The reason behind the replication procedures (literal replication and theoretical replication) in those multiple-cases is the development of a rich theoretical framework which states the conditions under which e-service is likely to be found as well as the conditions when it is not likely to be found within Egyptian governmental organisations. The theoretical framework later becomes the vehicle for generalising to new cases.

4.3.4 The Rationale of the Interview Technique

This study uses semi-structured interviews as the primary data collection technique. The reason for this choice is that interviews are the most fundamental of all qualitative methods help to generate insights into how respondents see the studied phenomenon. In addition, interviews are considered to be one of the most important sources of case study data collection.

With regard to interpretive case studies similar to those in this research, interviews are the primary data source (Walsham, 1995). This is because it is through this method that the researcher can best access the views that participants have regarding actions and events which have taken or are taking place, along with the views and aspirations (which they have) of themselves and other participants.

Through the one-to-one meeting between the researcher and the interviewee, a semi-structured interview technique gives the researcher the opportunity to probe deeply to uncover new clues and open up new dimensions of the studied phenomenon. This helps greatly in securing accurate accounts that are based on the interviewees' personal experiences.

Easterby-Smith et al. (2002) confirm that the semi-structured interview is an appropriate method when it is necessary to understand the constructs that the interviewee uses as a basis for his/her opinions and beliefs about a particular situation.

4.3.5 Research Methodology Adopted

After identifying and justifying the research adopted approach, methods and techniques, this section discusses the research methodology process which involved the use of techniques such as the literature review and government officials' interviews. The research process was composed of seven phases as demonstrated in Figure 4.4.

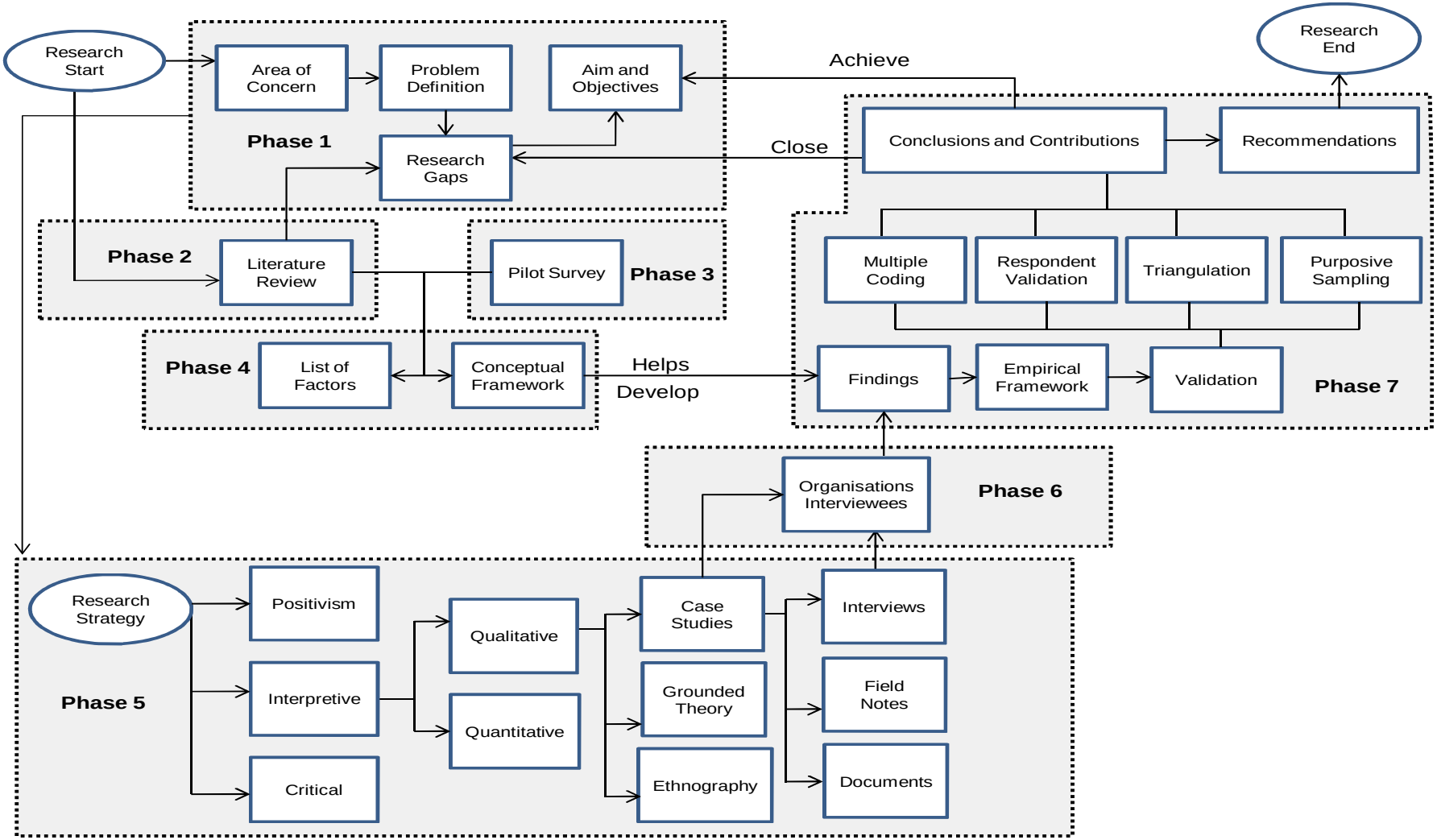


Figure 4.4: Research Methodology Adopted

Phase 1: Problem Definition:

In this phase, the e-service area in the Egyptian government has been explored. The research problem arose from detecting only a few studies that examined the factors affecting the e-service development and implementation in the Egyptian government context. This meant there was a need for a research to investigate how Egypt in particular can plan, implement and provide successful e-service projects, overcome the barriers and avoid project failures. So an aim has been determined to examine the factors that assist and hinder e-service initiatives implemented by the Egyptian government. Derived from the overall aim, the research objectives have been specified to investigate the successful e-service projects that have been implemented by the Egyptian government and determine the problems and enablers that will be encountered in the development and implementation of these projects. In an attempt to increase the opportunity for these projects to succeed, the research also aimed to determine the means by which Egyptian government can overcome the barriers that hinder the e-services projects and develop a framework for e-service that can be implemented by Egyptian government organisations.

Phase 2: Literature Review

The second phase includes conducting an extensive review of the relevant work to better understand the subject areas. These areas included literature on e-government definitions, scope, nature, interactions and stakeholders. In addition, stages of e-government development, stages and models were also reviewed. It is significant to note that the review of literature on the barriers and enablers of e-government services development demonstrated the existence of more gaps in knowledge. An absence of frameworks for different challenges and enablers that are faced when attempting to implement e-service projects has also been noticed. In addition, there are not enough explanations of the solutions for how to overcome the barriers encountered during the different phases of e-service project implementation. There were few qualitative researches and case studies that examined the factors affecting e-service development and implementation.

Phase 3: Pilot Survey

With the purpose of gathering views about what factors influence the e-service introduction, development and implementation, the researcher conducted two pilot surveys before the main stage of primary data collection. The surveys targeted individuals working in a government organisation providing e-service, and citizens either have or have not used e-government services before. The aim of conducting these surveys is to gain more knowledge from real life in addition to the knowledge the researcher obtained from literature.

Phase 4: Conceptual Framework Development

In this phase, a list of the barriers and enablers that affect the e-service projects has been created by the researcher based on the reviewed literature presented in chapter 3. Then, an initial conceptual framework has been proposed by the researcher for capturing the main barriers and enablers for e-government development. Both the list and the conceptual framework built on an amalgamation of the previous studies that have conceptualised the e-service challenges in the government and the findings from the conducted surveys.

Phase 5: Research strategy Development

In parallel with reviewing the literature and conducting the pilot surveys, the researcher was deciding about which research strategy to adopt for this kind of research. The purpose of this phase is to decide on a suitable research strategy and to outline the research methodology that was followed to ensure that its design is appropriate to provide the answer to the research main question and achieve its aim and objectives. Quantitative and qualitative research approaches were considered and a qualitative strategy chosen. The methods and issues related to the chosen paradigm, the qualitative approach, case study method and the interview technique are justified and analysed for the purposes of this study.

Phase 6: Data Collection and Analysis Process

This phase necessitates the collection of data from the government organisations. This includes selecting the relevant organisations from which the key informants were carefully chosen based on certain criteria such as the extent of use of ICT and the importance to the organisation service to the public. The key informants were contacted, meetings were scheduled and interviews took place. The barriers that faced them and the methods they used, or intended to use, to overcome those barriers have been reviewed with key senior officials as well as their perceptions about the enablers that facilitate the implementation of the projects. The data from the interviews have been transcribed, processed and analysed.

Phase 7: Development and Validation of the Empirical Framework

Based on the analysis, the initial framework was modified to accommodate the emerging findings. Finally, both the findings and the final framework were validated using some common technical strategies (such as purposive sampling, triangulation, multiple coding, and respondent validation) to ensure the quality and rigour of this research's findings as a qualitative research and the usefulness of the developed framework.

4.4 Reliability and Validity

As with all empirical research, case study quality can be assessed by four common tests. These are:

- Construct validity: establishing correct operational measures for the concepts being studied.
- Internal validity: establishing a causal relationship, whereby certain conditions are shown to lead to other conditions.
- External validity: establishing the domain to which a study's findings can be generalised.
- Reliability: demonstrating that the operations of a study, such as the data collection procedures, can be repeated, with the same results.

Some scholars assert that the same standards of validity (i.e., the extent to which a measurement measures what it purports to measure) and reliability (i.e., the extent to which a measurement procedure yields the same answer every time it is carried out) which apply to quantitative research, should apply to qualitative research (Lowery and Evans, 2004).

According to Robson (2002) **validity** deals with identifying whether a piece of qualitative (flexible) research is accurate, correct, or true. Therefore, reliability, within a qualitative research context, is concerned with the reliability of the methods and practices used; the data collection methods should be structured and consistent, as well as the research strategy. **External validity** (sometimes referred to as Generalisability) deals with the problem of knowing whether a study's findings are generalisable beyond the immediate case study (Yin, 1994). The external validity problem has been a major barrier in doing case studies. It is claimed that single cases offer a poor basis for generalising. However, such critics are implicitly contrasting the situation to survey research, in which a sample readily generalises to a larger universe. While survey research relies on statistical generalisation, case studies rely on analytical generalisation. In analytical generalisation, the investigator is striving to generalise a particular set of results to some broader theory (Yin, 1994). **Reliability**'s objective is to be sure that, if a later researcher followed exactly the same procedures as described by an earlier researcher and conducted the same case study all over again, the later researcher should arrive at the same findings and conclusions. The goal of reliability is to minimise the errors and biases in a study (Yin, 1994).

Robson (2002) listed the main threats to validity and reliability which can be minimised or eliminated if addressed well in advance by the researcher:

- Reactivity: refers to the way in which the researcher's presence may interfere with the case setting.
- Respondent bias: refers to the cases where the respondents treat the researcher as a threat; thus, try to hide information from him/her. Also, it

refers to instances where the respondent gives an answer which would please the researcher.

- Researcher bias: refers to the assumptions and preconceptions that the researcher may bring and lead to a selection of certain people for interview who are likely to generate the desired results.

In addition, Robson (2002) developed some strategies to deal with these threats. These are the following:

- Prolonged involvement: the researcher spends time within the research setting, trying to create relationships with the participants and understanding the culture of the setting. Prolonged involvement could increase the researcher bias.

- Triangulation: the use of different methods and sources to improve the research rigour.

- Peer debriefing and support: debriefing sessions after a long period within the research setting can aid reduce researcher bias.

- Member checking: getting feedback from the participants is crucial for the research credibility.

- Negative case analysis: refining an analysis until it can explain a majority of cases.

- Audit trail: keeping a full track of the activities taking place during the research.

- Purposive sampling: offers researchers a degree of control rather than being at the mercy of any selection bias inherent in pre-existing groups.

In this research, four strategies have been adopted to discuss reliability and validity of the analysis and results. These strategies are purposive sampling, multiple coding, triangulation, and respondent validation. Validation strategies

adopted and the overall validation process in this research are discussed in detail in chapter 8.

4.5 Chapter Summary

This chapter generally outlines the research methodology that has been followed to ensure that its design is appropriate to provide the answer to the research question and achieve its aim and objectives. It initially summarised the philosophical positions that underlie the designs of management research. A comparison between positivist, social constructionism, and critical paradigm has been conducted. Also, a summary is included of the different research approaches and disciplines to research design (qualitative and quantitative) within which knowledge is acquired.

Within the qualitative research context, the chapter explained a range of research strategies, one of which could have been adopted in this study. Among these strategies are research strategies: biography, phenomenology, grounded theory, ethnography, and case study. The latter was selected to be the strategy adopted in this research. Particularly, the multiple-case design that follows the replication logic has been chosen so that the similarities and differences between cases could be easily compared. Finally, the different sources of evidence that suit the case study research are explained in this chapter. Among these sources are documentation, archival records, interviews, direct observation, and physical artefacts.

The chapter also provided the rationale for selecting a suitable research strategy (interpretive, qualitative case study strategy). The chapter went on to describe the adopted data collection procedures and techniques, and the kinds of criteria used to judge the quality of the research design.

5 CHAPTER FIVE: DATA COLLECTION AND ANALYSIS: APPLYING THE STRATEGIES AND TECHNIQUES

5.1 Introduction

The previous chapter outlined the research methodology that has been followed in this research, and described the rationale towards selecting a suitable research strategy.

The purpose of this chapter is to:

Describe the details of the procedures undertaken for the data collection, in addition to the techniques and plan applied for data analysis.

In order to fulfil this purpose, after this brief introduction, section 5.2 describes the pilot study carried out at an early stage of this research. In section 5.3, the detailed data collection procedures are explained. This will also include a list of the key organisations and interviewees who took part of this research, along with how these organisations and interviewees were chosen and identified according to certain criteria. This section will also include how the interviews were conducted in addition to how the data were processed for analysis.

In the previous chapter, the qualitative approach was justified for the purpose of this study. Hence, it was necessary to describe in this chapter how this research followed the process of building theory from case studies.

Section 5.5 discusses the use of computer programs as an aid to the analysis. The program used in this research is the QSR software package: NVivo. The chapter concludes with the summary. The five parts of this chapter are illustrated in Figure 5.1.

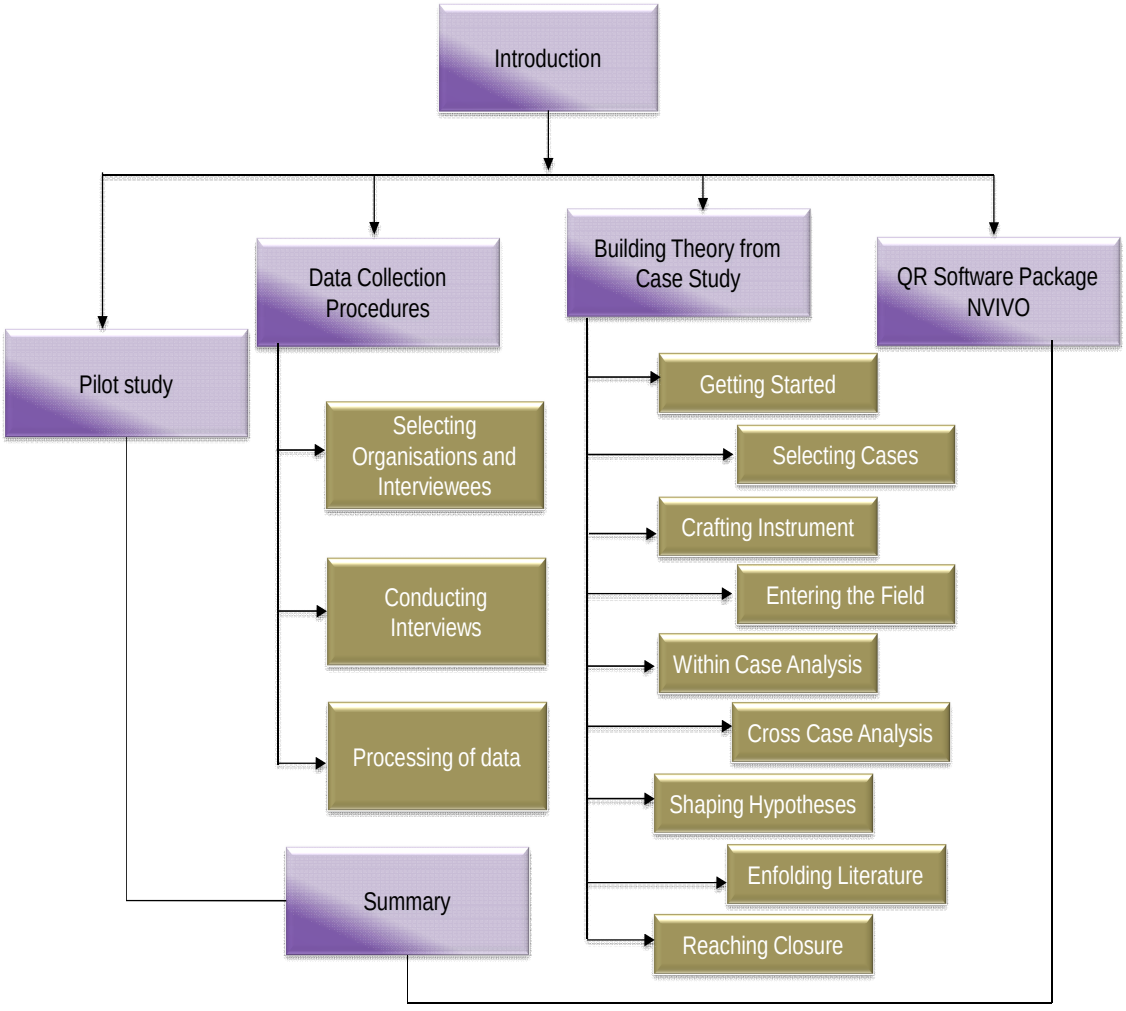


Figure 5.1: Outline of Chapter 5

5.2 Pilot Study using Questionnaire Based Survey

Two pilot surveys were conducted at an early stage of this research before the main stage of primary data collection. The purpose of conducting those surveys is to gather initial insights about what the factors that influence the e-service introduction, development and implementation could be. The surveys also aim to gain more knowledge about e-government services from real life in addition to the knowledge the researcher obtained from literature. Examples can include the extent of demand for e-government services; the extent to which e-public services are effective and useful to individuals; which e-public services are used by individuals; which are the most required by them; and which problems individuals experience when using e-services.

Moreover, the surveys helped to alert the researcher to any difficulties that were not anticipated before the actual primary data collection commenced. The two surveys were created and designed using “survey monkey” website http://www.surveymonkey.com/ as illustrated in Figure 5.2.

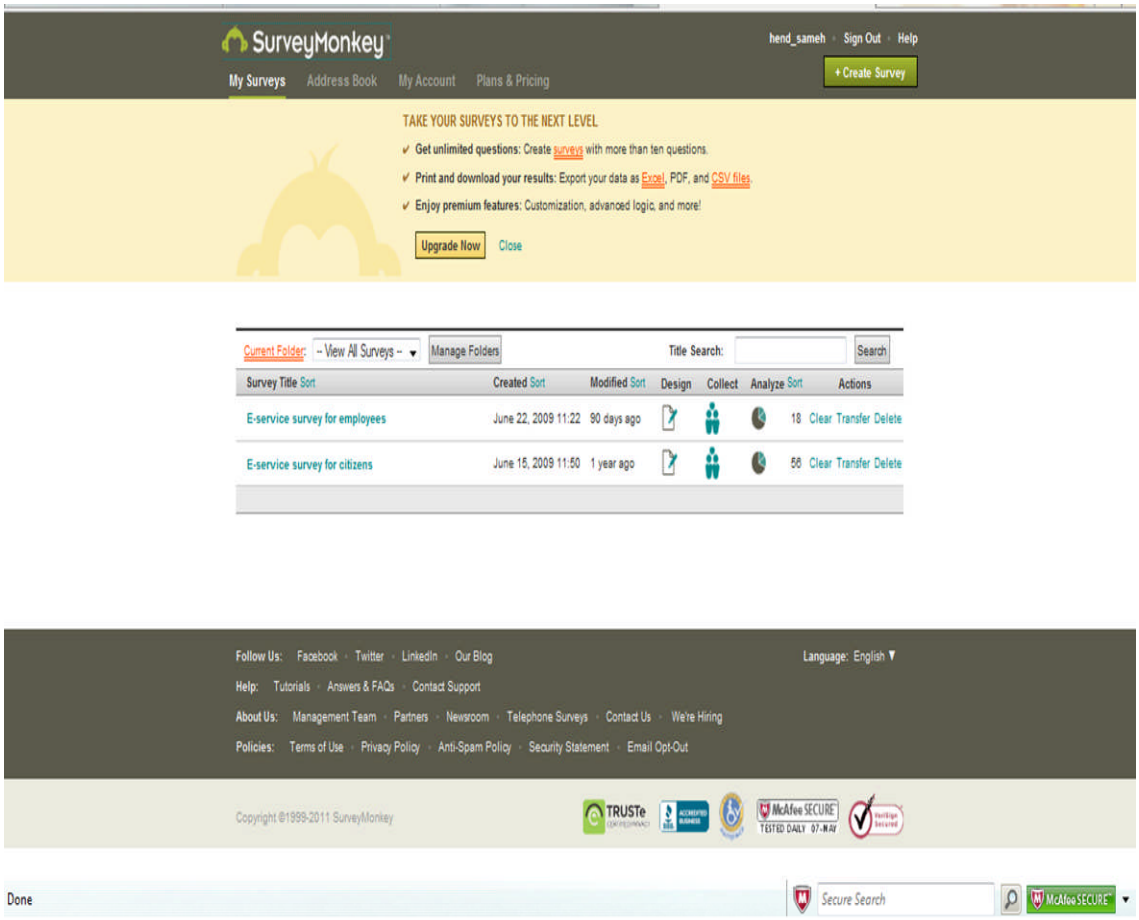


Figure 5.2: Pilot Surveys

The targeted respondents of the first survey were those who are working closely in an e-government service environment. Although the context was general (not limited to the developing countries), the benefit attained from the results of this survey is the comprehension of the factors that influence the process from a point of view such as those of employees. The second survey was targeting citizens, whether they have or have not been associated before with e-service activities. The aim of this survey is to be familiar with the opinion of public individuals regarding engaging with and benefiting from the e-service available in their context.

The process of piloting consists of an informal pre-test phase where the questions had been discussed with supervisor, fellow colleagues at Cranfield University, as well as IT specialists from the University's IT department. After responding to the valuable comments, a formal pilot test procedure was conducted using the Internet to survey small samples of the target populations, i.e. citizens and employees working in e-service organisations.

Over a period of five weeks, the two surveys were available online and e-mails were sent to The National Academic Mailing List Service, known as 'JISC mail'. From the several lists included, only lists interested in e-service in government were selected –other general mailing lists were excluded. This method helped in reaching the target participants appropriate for both surveys. Also, the surveys were disseminated through Synovate Marketing Research Company (http://www.synovate.com/) as a second means of reaching the targeted people.

The response collector's settings in the surveys were set to allow only one response per computer. This was important to avoid replication of responses. The surveys' findings confirmed the conclusions which had been obtained from literature about problems which individuals experience when using e-government services, the effectiveness, usefulness, and interest of e-services to individuals. Both surveys and their results are included in Appendix A.

5.3 Data Collection Procedures

5.3.1 Selecting Organisations and Interviewees

The choice of whom to interview for this specific research purpose and where is crucial, although not an easy decision to make. The selection of cases and interviewees for this research tended to be purposive rather than random. Purposive sampling is common in qualitative research. The reason is that the definition of the research cases is limited (the research is only interested in projects providing e-services targeted to citizens within the Egyptian e-government context). Furthermore, it allows the researcher to choose the cases.

The governmental organisations are chosen based on certain criteria. The first criterion is the use of information technology in the organisations' applications, as the extent of use differs from one organisation to another. This would determine the role the organisation plays in providing electronic services to the public. The second is the size of the organisations' beneficiaries and service recipients. This would identify the potential importance of the provision of electronic services. The third and final criterion is the organisations service itself and how important it is to the public.

The organisations from which the case studies have been chosen for this research are:

1. Ministry of Education: The University Enrolment Project
2. Ministry of Social Solidarity: The Family Card System Project
3. Ministry of Justice: The Ministry of Justice Projects
4. Ministry of State for Administrative Development: The CRM Project

When identifying the interviewees, the author began with initial choices of key interviewees. They were chosen based on their interest and involvement in the e-service development process in the Egyptian government, either as individuals or as representatives of a group. Those initial interviewees were asked to recommend others whom they thought were eligible for this research interview (snowballing technique).

Interviewees were chosen from three categories:

Policy making level: interviewees in this category are from main organisations that have the responsibility for e-service policy making, regulation and guidance for the entire Egyptian government. For example, advisors, consultants, heads of sectors, program directors, deputies and minsters from the Ministry of State for Administrative Development, Ministry of Information and Communication Technology, Information and Decision Support Centre (IDSC), and the Egyptian State Council.

Administrative level: the interviewees in this level are chosen from the public organisations that translate political vision into action plans. This means the organisations that have actual e-service projects implemented or in progress. The interviewees include general projects managers, executive projects coordinators and team leaders at the Ministry of Education, Ministry of Justice, Ministry of Social Solidarity, and Ministry of State for Administrative Development.

Private sector: this level consists of consultants from ICT private sector companies which have partnerships with the Egyptian government and are involved in the implementation of e-service projects They have useful experiences and knowledge about e-government projects overall. Thus they are able to give their knowledge about a wide range of e-governments projects in Egypt. For example: Microsoft is the supplier of the Egyptian government gateway. It provides consultation services to connect government entities that provide services through the main gateway.

The total number of interviews conducted is 24 from all the previously mentioned levels. The entire list of interviewees, along with their positions, their organisations, and their total number of years of experience is given in Table 5.1.

Table 5.1: List of Interviewees

No	Job Role	Organisation/Ministry	Years of Experience
1	Minister of State for Administrative Development	Ministry of State for Administrative Development	25
2	Deputy to the Minister	Ministry of State for Administrative Development	25
3	Vice-president of the Egyptian State Council Legal Advisor	Egyptian State Council and IDSC	32
4	Program director (Government Services Development)	Ministry of State for Administrative Development	13
5	Head of Policies and Program Sector	Ministry of State for Administrative Development	18
6	Judge- vice president of the Egyptian State Council -legal Advisor to the Minister	Egyptian State Council and MSAD	14
7	Program director (National Databases Program)	Ministry of State for Administrative Development	21
8	General project manager (Family Card project, the family databases project, and the targeted families' databases project)	Ministry of Social Solidarity	28
9	Deputy Program Director for e-government services	Ministry of State for Administrative Development	11
10	General Project Manager (University Enrolment project)	Ministry of Education	20
11	Project Manager (Ministry of Justice Projects)	Ministry of Justice	16
12	Executive Project Coordinator (Family Card project)	Ministry of Social Solidarity	14
13	Gateway Team Leader (University Enrolment Project)	Ministry of Education	10
14	Advisor of Strategic Projects	Ministry of State for Administrative Development	25
15	General Projects Manager (Ministry of Justice projects)	Ministry of Justice	23

No	Job Role	Organisation/Ministry	Years of Experience
16	Project Manager (Institutional Development Program)	Ministry of State for Administrative Development	15
17	E-government Program Coordinator	Ministry of State for Administrative Development	8
18	Manager of Information and Communication Technology Centre, Mansoura University	Ministry of Higher Education and Scientific Research	22
19	Ministry's Consultant and Spokesman	Ministry of State for Administrative Development	19
20	CRM Team Leader	Ministry of State for Administrative Development	9
21	Head of the e-signature, CA licensing (Information Technology Industry Development Agency ITIDA)	Ministry of Information and Communication Technology	14
22	Project Manager (CRM Project)	Ministry of State for Administrative Development	17
23	Public Sector Engagement Manager	Microsoft	11
24	Enterprise Services Director	Microsoft	15

5.3.2 Conducting Interviews

Before proceeding with conducting the interviews, the necessary permissions had to be obtained in order to approach the identified interviewees. Help was, therefore, requested from the Dean of Faculty of Commerce, Mansoura University in Egypt – in which the researcher works as assistant lecturer – to help issue a formal letter addressing key decision makers in MSAD, as this is the ministry responsible for the e-government program in Egypt. In addition, some help from well-known academics has been obtained to facilitate approaching those decision makers.

The first meeting was informal with the Deputy Minster. The purpose of the research was explained, along with the reasons behind conducting the interviews. The researcher was supported by many documents including:

- A formal letter from the Director of Studies requesting permission to conduct interviews and confirming her research subject and area of concern.
- A formal letter from Cranfield University registry confirming the course title and the sought degree from the thesis.
- A formal letter from the Faculty of Commerce, Mansoura University in Egypt confirming the researcher's work as assistant lecturer.
- A copy of the interview questions (in both Arabic and English).
- An outline of the research, its aim and objectives.
- The initial list of the possible interviewees the researcher wished to meet.

The Deputy Minister was very cooperative and started immediately to respond to the researcher's request to conduct the interviews. He sent an official letter addressed to all the required interviewees in the initial list, attaching the interview questions, requesting them kindly to participate. He also sent the same letter to other e-government leaders whom he recommended and thought had the knowledge in the research subject that they could share during the interviews. In addition, he kindly agreed to be the first interviewee and arranged a meeting with the researcher in the next day.

After being guaranteed permission to proceed in conducting the interviews, the researcher started to correspond with the interviewees and arranged meetings with them one after the other. The same package of documents mentioned earlier was prepared for each interviewee for double confirmation and to give them insights into the issues that would be discussed during the interviews.

It was certified before the beginning of the interview that the research would treat the data collected from the interviewee confidentially and that the

anonymity of all participants would be assured at all times. Then the researcher requested permission to tape-record the interview and all the interviewees agreed. All interviews began with a short description of the research, including aim, objectives, estimated time for conducting the interview, and emphasis on the key role of the interviewee's views.

The interviews' duration ranged from 60 to 90 minutes each and they were all tape-recorded. In addition to these recordings, notes were taken to record observations about the meetings. These notes helped later when writing a full report for each interview, along with the recording's transcription. These notes were also a back-up in case the tape recordings failed. At the beginning of each meeting, the interviewees were asked to fill out an individual information sheet. In addition to the interviewee's first name, surname, and the date of the meeting, the sheet contained the interviewee's current and previous positions, education and qualifications. At the end of the meetings they were also asked to recommend other persons whom they thought would be eligible for interview.

The researcher also was given some internal official documents from some of the interviewees. These documents include annual reports, magazines, statistics, guidelines, codes of practice, recommendations, standards, meetings minutes and presentations.

The individual information sheet, and the interview questions in Arabic and English are included in Appendix B.

5.3.3 Processing of Data

The collected raw data (direct tape recordings, field notes, and official documents) had to be processed before they were available for analysis.

Interview recordings were transcribed. The researcher, while listening to the tape, made notes, selected quotes and wrote her own comments. As all the interviews were conducted in Arabic, the translation into English was a fraught and troubled process as the researcher tried to translate the meanings rather than just the exact words. Special care was taken with word emphases, facial

expressions, explanatory gestures in order to reach a smooth and clear summary of the main ideas presented by the interviewee.

The raw field notes taken during the interviews were converted into reports. These reports were reviewed and edited for accuracy and prepared to be coded and analysed along with the rest of other types of data. Then, all records were organised in a database, as recommended by Yin (1994), along with primary data (interview transcripts for each interviewee and field notes) and secondary data (official documents collected from the ministries concerned).

As described in Miles and Huberman (1994), the information obtained from each interview was analysed separately where each interview was first broken down into themes. These themes had been already specified at the beginning of the semi-structured interview document before conducting the interviews. The reason for this thematic analysis was to identify the issues that are important in order to understand the e-government development initiative in Egypt. Those major themes are:

- Conception of interviewee of e-government and its objectives in Egypt.
- The interviewee's views about major barriers and challenges encountered either before or during the implementation of the projects in various aspects such as: political, organisational, and legislative.
- The interviewee's opinion on how and why these barriers occurred and the previous and/or possible future solutions for overcoming them.
- Assessment of the benefits resulting from the project implementation and the perception of their success factors.
- The strategies, key development and implementation steps, and the resources used for the implementation of the e-services projects.
- Suggestions and action plans for future planning of an e-service in the public sector.

According to those themes, meanings have been assigned to the descriptive information compiled during the interviews. At first, a start list of provisional meanings or “codes” was created. This list came from different sources including the conceptual framework, research questions and literature review. Those codes were attached to words, phrases, or sometimes whole paragraphs. By reviewing written data and attaching codes to them, more codes were generated and the free list of codes started to grow. This level is called first level coding.

In the next level of analysis, the codes from the first level were grouped into a smaller number of sets or themes. Therefore, trees of basic categories and sub-categories (hierarchical code system) was developed which helped in describing the features of the data, and facilitated comparisons between cases and spotting the relations between categories and sub-categories (axial coding) (Richards, 1999). This grouping into categories helped to reduce a large amount of the data into a smaller number of analytical units and helped to lay the groundwork for the cross-cases analysis.

In this level of analysis, mental models are elaborated in the course of piecing together the identified factors in the research. Those mental models are abstracted webs that represent an inferential picture when organising the field study data. Therefore, for each case study in this research, a model has been developed. The reason for creating such models is that text and maps together communicate more than either could alone. The research is aiming towards an explanation – not just a description of what happened in the cases. Afterwards, each single model is used to generate a more general map and explanations for the cross-cases level of analysis.

The created models (shown in Figure 6.3, Figure 6.5, Figure 6.6, and Figure 6.9 in Chapter 6) for the four case projects illustrated clearly the outcomes of the data analysis and helped the development of the findings. They display the most important dependent and independent variables and the relationships among them. The plot of these relationships is directional, rather than solely correlational (i.e. some variables exert an influence on others). The approach

used to generate the network was the “constructive” or “generative” approach. Accordingly, a full set of network variables were generated and came directly from the case data. As recommended by Miles and Huberman (1994), this is done by listing all the events, factors, outcomes and processes that seem to be important in each case, and then turn them into variables that can be scaled. For instance, the several disagreements on priorities become “organisational conflict”. After rating all the variables, connections between pairs of variables that co-vary are drawn, i.e. variables that appear together consistently in the case, that have some kind of relationship.

Each model shows the different objectives for each project, the prospective benefits attained from them and the enablers that facilitated the launch and the implementation of the projects as emphasised by the group of interviewees. All these groups of elements are then associated with the groups of barriers that appeared throughout the life of each of the projects. All figures show the link between each of those elements (objectives, benefits, and enablers) and the barriers. Some of the elements participate in eliminating some barriers.

For example, one of the project’s main objectives can be related to overcoming a persistent problem that concerns a group of stakeholders. On the same level, one of the main benefits attained from the projects, and/or one of the main enablers behind the projects can be associated with the solution of the barriers that occurred, or even have a role in the attainment of one of the main projects’ objectives. The mental maps are illustrated after each description in chapter 6 with a detailed analysis.

5.4 Building Theory from Case Study

As mentioned earlier in Chapter Four, this research is an inductive case study research, which involves multiple cases and numerous levels of analysis. Also, it combines several data collection tools including interviews, field notes and documentary data. Therefore, Eisenhardt’s (1989) roadmap has been followed for building theories from case study research. The steps are summarised in Table 5.2.

Table 5.2: Process of Building Theory from Case Study Research

Source: Eisenhardt (1989)

Step	Activity	Reason
Getting Started	Definition of research question Possibly *a priori* constructs	Focuses efforts Provides better grounding of construct measures
Selecting Cases	Neither theory nor hypotheses Specified population Theoretical, not random, sampling	Retains theoretical flexibility Constrains extraneous variation and sharpens external validity Focuses efforts on theoretically useful cases
Crafting Instruments and Protocols	Multiple data collection methods Qualitative and quantitative data combined Multiple investigators	Strengthens grounding of theory by triangulation of evidence Synergistic view of evidence Fosters divergent perspectives and strengthens grounding
Entering the Field	Overlap data collection and analysis including field notes Flexible and opportunistic data collection methods	Speeds analyses and reveals helpful adjustments to data collection Allows investigators to take advantage of emergent themes and unique case features
Analysing Data	Within-case analysis Cross-case pattern search using divergent techniques	Gains familiarity with data and preliminary theory generation Forces investigators to look beyond initial impressions and see evidence through multiple lenses
Shaping Assumptions	Iterative tabulation of evidence for each construct Search evidence for “why” behind relationships	Sharpens construct definition, validity, and measurability Confirms, extends, and sharpens theory Builds internal validity
Enfolding Literature	Comparison with conflicting literature Comparison with similar literature	Builds internal validity, raises theoretical level, and sharpens construct definitions Sharpens generalisability, improves construct definition, and raises theoretical level
Reaching Closure	Theoretical saturation when possible	Ends process when marginal improvement becomes small

5.4.1 Getting started

The research was started by defining the research questions initially in broad terms, in terms of the barriers and enablers of e-service projects. Also, the research focus was narrowed and defined to be governmental organisations in the Egyptian context. Such definition of research questions and narrowing of the focus made it easier to specify the kind of organisations to be approached and the kind of data to be collected.

The second move was an *a priori* specification of concepts, ideas, variables, groups and phases of the e-service transformation. This was done by reviewing the literature and the other experiences in the field, in addition to the results of the surveys mentioned earlier. This helped to shape the initial design of the research framework. Although identification of the concepts was helpful, it was recognised that none of the concepts was guaranteed a place in the final framework.

5.4.2 Selecting Cases

The first step of defining and narrowing the focus helped in identifying the population from which the sample of cases is drawn. From the many projects in the e-government program in Egypt, only the e-service projects dedicated to citizens (G2C) have been chosen, i.e. not to businesses (G2B) or to other governmental organisations (G2G). Moreover, the projects that showed a reasonable extent of success were selected from a range of e-service projects. Such selection of projects helped to control variation and define the limits for generalising the findings. The selection relied on theoretical purposive reasons, not statistical reasons.

5.4.3 Crafting Instruments and Protocols

In this research, multiple data collection tools were combined, including interviews, field notes and documentary data. Such triangulation of data sources provided a stronger substantiation of constructs. The research depended on qualitative evidence, although case study research can involve qualitative data only, quantitative only, or both. Although the foundation of the

framework was partly created from systematic data, the reason for the choice of qualitative data sources, as mentioned earlier, is that the qualitative data are useful for understanding the rationale of underlying relationships.

5.4.4 Entering the Field

In this step, the selected interviewees were approached and the collection of data started. In this stage, it was noticed that data analysis overlapped with data collection. For example, field notes taken involved both observations about what happened during interviews and analysis at the same time. This overlap of data analysis and collection gave a headstart to the analysis and allowed the researcher to take advantage of flexible data collection, when to decide to add other cases and remove others, or to add some questions to the interview protocol.

5.4.5 Analysing Within-Case Data

This stage involved writing detailed reports for each case study. These reports are simply descriptions, but generated much insight. These descriptions helped to cope, in the analysis process, with the large amount of data collected. The researcher in this stage became familiar with each case as a stand-alone entity. After each description, the outcomes of the data analysis for each of the cases were explained and mental maps were elaborated to clearly illustrate these outcomes. The unique patterns of each case were highlighted before the patterns across all the cases were generalised.

5.4.6 Searching for Cross-Case Patterns

The researcher started to look at the data in many different ways to search for trends across all cases. For each of the categories and dimensions previously identified and included in the initial framework, the researcher looked for within-group similarities coupled with intergroup differences. The researcher moved in this step beyond the initial impressions (obtained during the collection of data) to accurate and reliable evidences through the use of structured and diverse lenses on the data.

5.4.7 Shaping Assumptions

From the previous within-cases plus the cross-cases analysis, the relationships between identified variables began to emerge. According to the new emergent themes and relationships, the initial framework was modified. Then the modified framework was compared with the evident new themes and relationships between variables and the evidences from each case in order to assess how well they fitted with the case data.

5.4.8 Enfolding Literature

The findings in this step have been compared with the literature. Some of the findings tended to be similar, for example, refusing the common misconception about the transformation to e-government being easy and simply a technological change. Some other findings contradicted the literature, for example, the emphasis on the cultural issues of e-government transformation in Egypt, more than any other issue emphasised by prior studies. The findings that conflicted with literature were identified and it was explained why this occurred and how this contradiction would affect the findings' generalisability. In addition, similarities to the literature have been also identified and the common ties within a specific phenomenon are highlighted. This step was really important in enhancing the internal validity and generalisability of the findings in this specific kind of research, where the findings rest on a very limited number of cases.

5.4.9 Reaching Closure

Because of many considerations, including time and money, the number of cases to be conducted was determined. In addition, the process of evidences revision began to lead to minimal incremental improvement. That was when the theoretical saturation had been reached and the researcher stopped looking for more evidences in the data. The modified framework is the final product of this research and it represents an example of a product of building a theory from a case study research.

5.5 Qualitative Data Analysis with NVivo

Qualitative computing has become widely accepted, even required, and packages have become more sophisticated (Richards, 1999). The software used in this research is widely regarded as offering a new stage in software development. QSR NVivo (Qualitative Data Analysis Software) supports new projects' structures and new research processes (Bazeley and Richards, 2000). Together, these provide very new choices for the management and analysis of data. The software combines the coding of rich data with similar ways of editing and revising rich text (QSR International, 2011).

In this research, changing and growing rich records have been built up from interviews, field notes and documents analysis. These records also came in different forms (text and tape recordings). This was normal due to the qualitative nature of this research. As a result, NVivo has been used as it provided a range of tools for handling such rich data records (Bazeley, 2007). Figure 5.3 shows using NVivo in transcribing interviews.

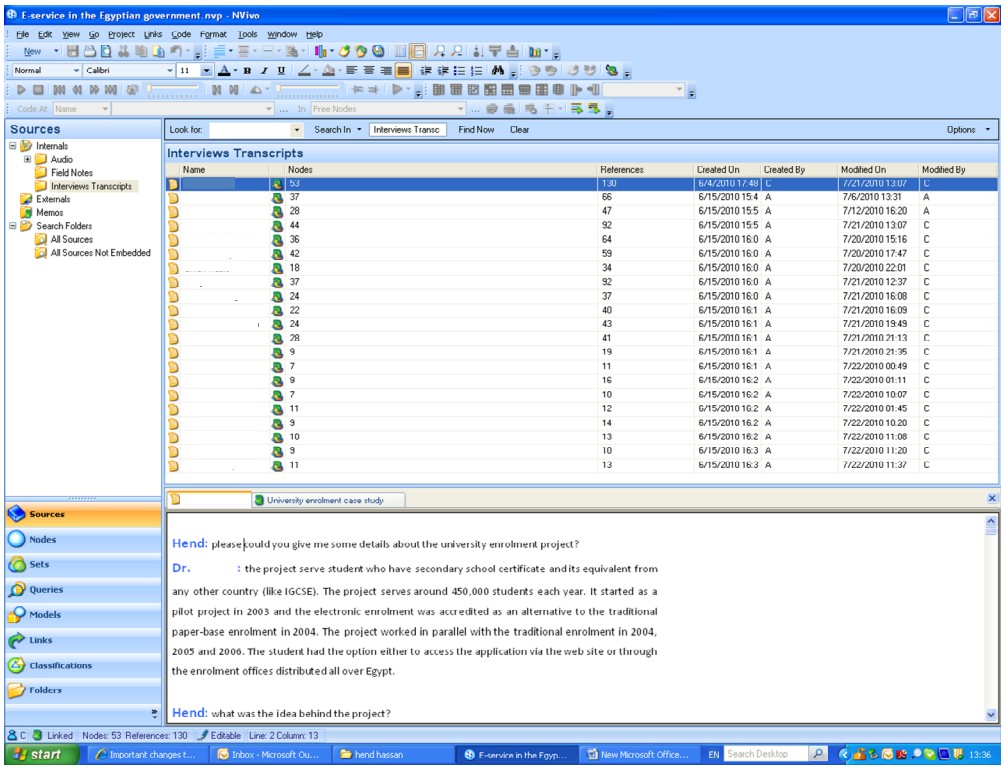


Figure 5.3: Analysing Interviews Using NVivo

Also, due to the large amount of the data that needed to be analysed, the coding process for the interviews has been done using NVivo (as shown in Figure 5.4) as it is very valuable in following a systematic approach to analysing and reducing the vast amount of data.

The software was used to code the data visually and in categories, annotating and gaining accessed data records accurately. Using the data reduction technique available within NVivo, the outcomes of the data for each project have been illustrated in a model (network) which helped in explaining the findings.

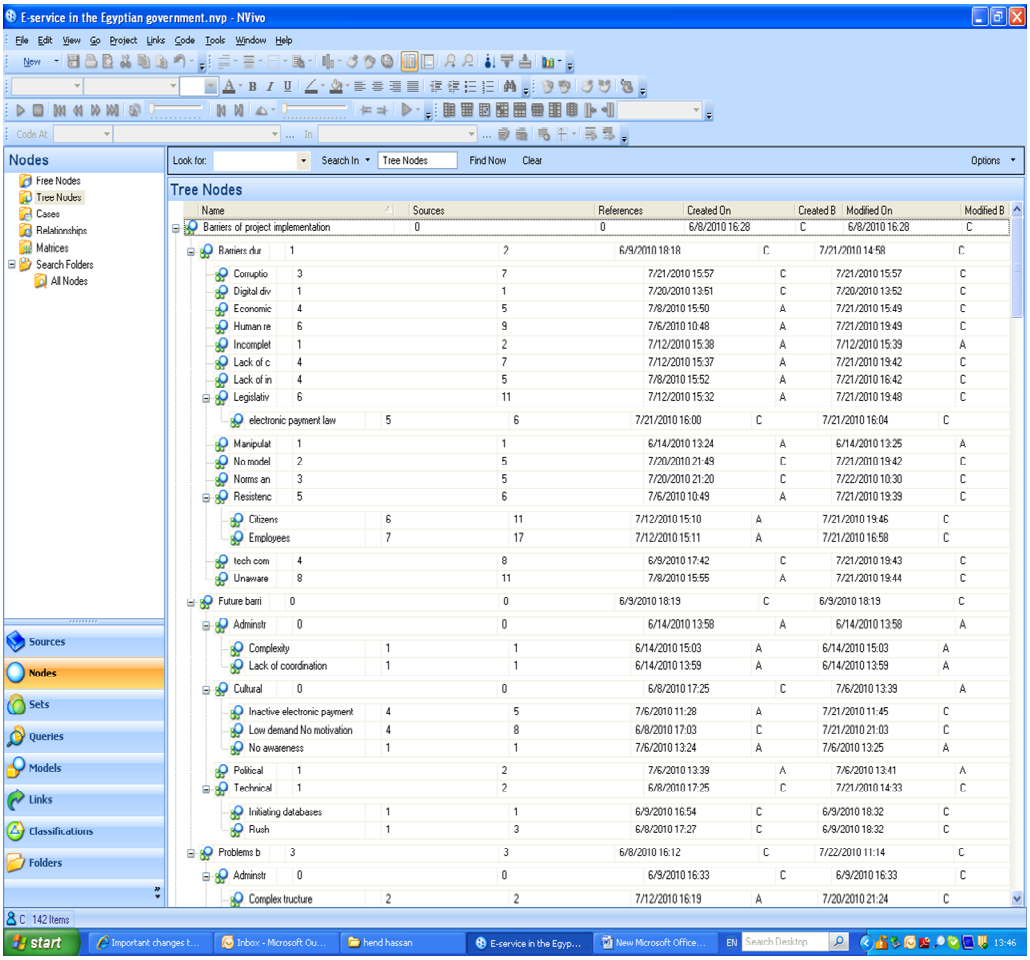


Figure 5.4: Coding Using NVivo

5.6 Chapter summary

In this chapter, the details of the procedures undertaken for the data collection were described, in addition to the techniques and plan applied for data analysis. This was necessary after the research methodology that has been followed was outlined in the previous chapter.

This has been fulfilled by describing the pilot study carried out as an exploratory part in the early stages of this research, explaining the detailed data collection procedures and giving the list of the key organisations and interviewees taking part in this research, along with explaining how these organisations and interviewees have been chosen and identified according to certain criteria. Finally, the use of the software package NVivo was explained as an aid to the analysis.

6 CHAPTER SIX: FINDINGS FROM E-SERVICE PROJECTS CASES

6.1 Introduction

In order to understand the main underlying factors which affect the development and implementation of e-services in the Egyptian government, it is important to commence this chapter with a description of the four cases conducted in this study (section 6.2). These cases represent the e-service projects within the Egyptian government implemented by different ministries in Egypt. This description begins by explaining the status before the implementation of these projects, and then the key benefits resulting from the projects are identified. The stakeholders of each project, i.e. who proposed and implemented the project, are specified next. A detailed explanation of how and when the projects were implemented follows. This is done by specifying the strategies used in the implementation, the key development and implementation steps and chronology, the main obstacles encountered during the implementation and how they were overcome, and finally the resources used for these projects. The description of the projects concludes by explaining how they can be sustained and transferred. The created networks for each of the case projects are incorporated to illustrate the outcomes of the data analysis and help the development of the findings. Finally, section 6.3 concludes the chapter. The outline of this chapter is illustrated in Figure 6.1.

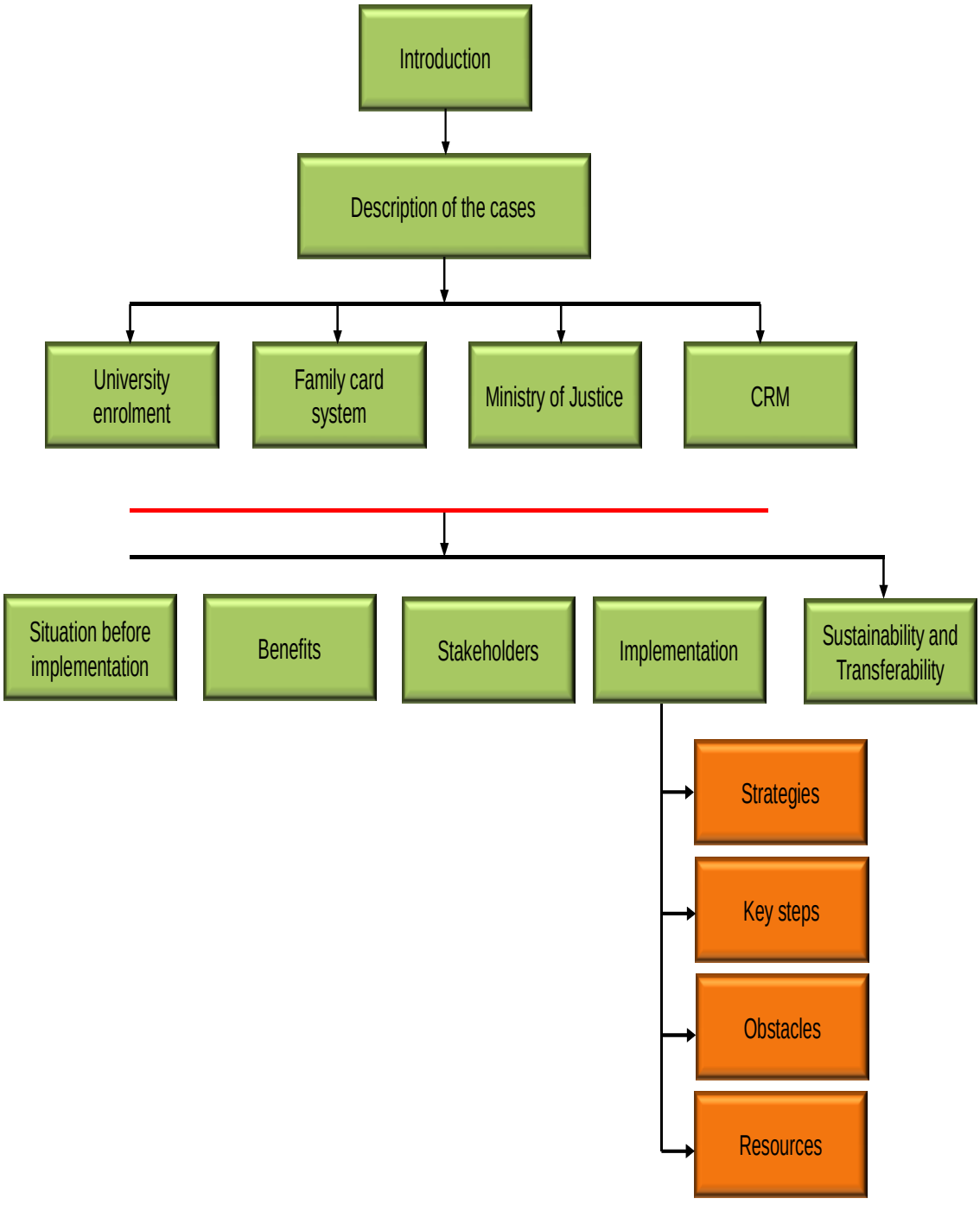


Figure 6.1: Outline of Chapter 6

6.2 Case Description and Analysis

6.2.1 Case Study 1: The University Enrolment

This project was the Western Asia winner of United Nations Public Service Award (UNPSA) in 2009 for improving the delivery of services category. The project takes measures to provide high quality service delivery; achieve effectiveness; achieve efficiency. In addition, the project represented a creative approach in design, introduced a substantially new concept, and produced qualitative improvements in service delivery.

- **Status before the project**

Admission to public universities and institutions in Egypt operates through a centralised office, the University Enrolment Co-ordination Office (UECO). This office enrols over 450,000 students into these universities and institutions each year.

The public service tackled in this case is the application process for desired universities/institutes. The application takes place after the students receive their secondary school certificate scores (either from Egypt or abroad), on which admission precedence depends (with students having the highest scores getting first choice of the universities they will be joining).

This application process takes place in 19 offices distributed all over Egypt in order to try to serve students in their regions as much as possible. This process is further complicated by the ever-increasing number of students eligible to join universities each year, as well as the unequal demand for particular faculties in universities.

All eligible students are divided into three groups, based on their secondary school certificate results. Accordingly, the university enrolment is carried out at three different stages. The first group (the highest-scoring third) usually consume the so-called top faculties (e.g. Medicine, Pharmacy and Engineering). The second stage offers the less desired faculties with lower score requirements, while the third stage is generally left with the educational

institutes that required the lowest scores for entry. Each year, following the announcement of the Egyptian General Secondary Certificate results, the date for acceptance of admission applications for each stage is announced. Both students and their parents flood the university enrolment offices, and stand in long lines waiting for their turn to buy the paper application forms (costing EGP40 per application – about £4). The application is both discipline-based and university-based. Students are asked to complete the admission application by listing their choices of their desired discipline and university in a descending order of preference. The forms are filled manually; the total number of choices that each student has to complete is 48. The applications are then submitted back to the university enrolment offices. Therefore, students and/or their parents need to visit the university enrolment office at least twice to apply for university enrolment. Also, once the office receives the student form no change can be made to its contents, even if the form includes mistakes, which reduces the student's chance to have a suitable place at the university. Also, students were not able to access their personal information before the university enrolment results were out, and mistakes would be transferred to universities and students were usually not able to correct them before graduation.

There are bonus marks added to the results of students who have achievement in any sport game. These sports incentive bonus marks are added to the student total marks when he/she receives a certificate from the Ministry of Education or the National Sports Council then the student submits the certificate with the application form.

All student applications ultimately end up at a centre in which all data from each and every student application form are entered by *seasonal* data entry personnel (causing many data entry errors often affecting the institute the students end up at), into the back-end legacy system where the matching process is carried out.

Once the enrolment phase results are declared, students are notified of their results by mail. Each student has to join his/her university (no matter where it is located) for at least one year before applying to transfer to another one (and

that is only if he/she receives high scores). Throughout this period, students need suitable accommodation away from their families which burdens them with extra expenses, and burdens the government with expenses for hostel establishment and operation costs/responsibility as well as means of transportation. Furthermore, the whole process of university enrolment has to be carried out within a limited time frame between the time of declaring the results and scores and the start of the academic year. A mature solution was required to serve students in a better way, reduce costs, and solve all reported problems.

- **The key benefits resulting from the project**

The initiative taken is to replace the paper process by a comprehensive web-based application that accepts student university enrolment applications, and is supported by a 24/7 call centre for student support, hence, availing the enrolment application service virtually anywhere that the Internet is available. Students were able to access the application with their student IDs and a special PIN code that they received along with their secondary school certificates.

The online application is offered entirely free of charge, compared to the EGP40 that each student used to pay for the paper application and manuals. Given that over 450,000 students apply for university enrolment annually, this alone results in savings of over EGP18 million (£1.8 million) for the public. It is not considered a loss for the government as the amount paid for the application are spent on the operational process of the manual system. Hence, this amount is not needed anymore, and it is considered savings for the government in time and effort, not to mention the savings in transportation.

The application provides the students with guidelines, rules and interactive online help. These guidelines are built into the application form itself, and prevent the student from including any choice that contradicts with the enrolment rules and regulations (which was not the case before). This means that only error-free forms are submitted.

Students no longer need to take Sports Incentive certificates (from the Ministry of Education or National Sports Council) to the university enrolment office. Once an eligible student applies for the Sports Incentive certificate, the bonus marks are automatically added to his/her results on the university enrolment application. The application also allows the student to check his/her personal information before s/he submits his/her choices. This helps in minimising future errors.

Another benefit of the online application is that students now have the chance to alter their choices after submitting them, as long as this is within the timeframe for the phase they are in, an option that was not possible in the old system.

The transition to the online application is supported by exponentially expanding the e-government call centre hotline, to help students with the online application; for instance, fill their forms or correct their personal data. It plays an important role in connecting students, decision makers and service providers. It is also used as a tool that communicates citizen reactions to the service, which has been successful.

Another benefit of the web-based application is that students no longer have to wait for their university enrolment result to arrive by mail; they can access it directly from the same website they used to submit their forms as soon as the results are declared. Also, they can receive the result as a text message on their mobile phone number (that they can opt to register).

According to statistics obtained from MSAD documents, recent estimates have placed savings by the online process at EGP40 million (£4 million), in transportation, accommodation, as well as operational costs for the government.

These estimates do not include further savings in paper forms, and seasonal staffing of university enrolment offices and data entry personnel. Furthermore, this project paved the way for further inter-government projects that require electronic interaction among different government organisations. This will

ultimately enhance government performance and develop a unified and standardised system as such systems help in consolidation, integration and aggregation of data.

- **The project stakeholders and implementers**

The project is led by the Ministry of State for Administrative Development (MSAD), which is the organisation responsible for the e-government program in Egypt, in early 2003. Meanwhile, the university enrolment process is owned by the University Enrolment Co-ordination Office (part of the Ministry of Higher Education).

MSAD played a crucial role in this initiative as the project manager. With many different stakeholders such as the developers, testers, UECO, Ministry of Education, call centre, as well as hundreds of thousands of students/users, this role was of upmost importance. The service was also dependent on the Ministry of Education which would feed the students' records (including personal information and results) to the UECO. The Ministry of Education also delivered student PIN codes and results to its schools.

The online application was implemented and hosted on the Egyptian Government Portal (www.egypt.gov.eg). The portal's operations team (part of MSAD) was responsible for service operation, security and technical support. A picture of the portal is shown in Figure 6.2.

Different public-private partnerships were utilised to finance printing and distributing PIN codes to eligible students over the past two years in order to cut government expenses. Those were usually telecom operators with available marketing budgets. Private companies compete annually to secure sponsorship of the application, which is a further witness to its success.

Figure 6.2: The Egyptian Government Portal

- **<u>The project implementation</u>**

The strategies used

The project main objectives were to reduce costs for both the public (students/parents) and the government (paperwork, staffing, etc.), offer the service through a more convenient channel (students would not have to travel to UECOs any more), and separate the service provider from the public. This was in addition to introducing workflow and data analysis techniques to enhance service performance, produce a flexible and scalable system design which makes it suitable for future consolidation and aggregation, as well as utilising available resources and upgrading the infrastructure to satisfy the citizens' requirements to enjoy an easy, interactive, non-stop service. Its final objective was to provide a continuous auditing system supported by the government's CRM and the service reporting systems.

Among the strategies employed in this project was opting not to go for a big-bang approach, but adopting a ramp-up strategy. The initiative was first introduced in 2004 and attracted a mere 3,500 students, which reached 21,000 students in 2006. In those years it ran in parallel with the paper system. Students had the choice to register through UECOs or online.

After three consecutive years with no major issues (not a single error in data, processing or performance) in the system, it was clear that it was ready for full-launch. In 2007, the UECOs no longer offered university enrolment application services. Students had to register their choices online.

Another strategy was that of contingency: a disaster recovery site was set up for the web-based application, should anything go wrong, as it would become a high-value target with more than 450,000 users. Internet connections for the applications were secured from four different service providers and different central offices as well. Severe security measures were also taken.

The final strategy was that of a certain level of performance that the e-government portal abided by: all of the portal's hardware was upgraded and it was able to support more than 1,000 concurrent users.

The key development and implementation steps and the chronology

MSAD investigated the universities enrolment application workflow, on its quest to identify public services that can be introduced through its e-government initiative.

MSAD secured approval from the Ministry of Higher Education (MoHE) in 2003 to introduce the web-based application channel when applying for university enrolment. The first edition of the application was developed by the Faculty of Engineering at Cairo University in 2003/2004 to make the 2004 university enrolment season. It was launched on the e-government portal in 2004 and ran in parallel with the paper application starting 2004 and ending 2006.

A decision was taken in late 2006 to abandon the paper application at UECOs and to choose the web-based application only for the 2007 season of university enrolment.

Extreme measures were taken in anticipation of the huge number of users for the system in 2007. More than 600 computer labs all over Egypt were made available to eligible students to use for free university enrolment applications. Well-trained specialists were available in each lab for nine hours a day to assist students/parents in filling out the applications, through all three university enrolment phases. The government call centre was operating around the clock as well to support students/parents. (Training sessions are held annually for CRM (call centre/e-mail/fax) agents and support team, as well as lab specialists, in MSAD.)

Log files from 2007 were analysed after all three phases were completed and not a single application error was found.

In 2008, an updated version of the application was launched. This one supported all secondary school certificates (both local and international) – international students had to submit their applications through UECOs in 2007.

The main obstacles encountered and how they were overcome

One of the main obstacles faced was the resistance to change from the MoHE's civil servants who worked at UECOs. But once the employees recognised how valuable automation could be for them, they became supportive rather than being in opposition. They were also persuaded to promote the change by providing different incentives and preparing employees to become good users and good change agents. Awareness sessions and workshops were held along with the required training to the different managerial levels (to guarantee their support) and employees (for support and implementation).

PIN codes were delivered to students by mail in the web-based applications' early years. This led to many PINs being lost/undelivered with students not being able to access the application (only 35% were actually delivered with

some not even opened). Starting 2007, the MSAD succeeded in persuading the MoE to attach the student PIN codes to their success certificates which was a key success factor for the project.

Problems related to infrastructure limitations were faced when the project started in 2004. This resulted in some deficiencies in the service while availing different phases' results when a huge number of students and their families tried to access the application in a very limited period of time (more than 120,000 users in less than three hours). In 2007, university enrolment results were sent to students in SMSs at the same time as deploying them on the service server and providing the same data through the main Internet service providers (ISPs) in Egypt at the same time which solved this problem completely.

The rules for university enrolment were set by the Universities' High Council ahead of the university enrolment season. However, these rules kept changing during the runs of the university enrolment web-based application in order to save further costs for the government. These changes had to be reflected in the online application in a very limited time and, without proper testing, had to be re-deployed on the e-government portal. The answer to this was well-designed applications that were implemented to allow rule modifications and these have been successfully sustained in recent years, where 86 deployments were done in the 2008 season. Operational costs for the project on MSAD's side were too high to be sustained with its limited budget. A public-private partnership was secured with private sponsors in both 2007 and 2008 to finance the whole initiative.

Resources used for the project

The project budget was initially part of the national budget (from 2004 until 2006) then the private sector covered all running costs for the succeeding two years and expected to continue sponsoring the project against some advertisements for its products by means of simple inserts with the student pin number and inclusion of its logos in media advertisements.

The annual running cost is about EGP2 million (about £200,000) including application maintenance and upgrading, PIN code production and delivery, application functional/security/burn-in (exhaustive) testing, and advertising.

MSAD covers all operation team salaries, portal costs and any costs arising due to sudden, unplanned cases that may happen while normal operations proceed.

MSAD also provides all the hardware available on its portal, which is mostly used up by university enrolment in its application season. Most importantly, MSAD oversees the execution of the whole project, as this is MSAD's fundamental strength.

- **Sustainability and transferability of the project**

The universities' enrolment web-based application is now the only channel through which to apply to public universities for Egyptian General Secondary Certificate holders in Egypt. It actually started a paradigm shift, making students realise how they can benefit from technology in their day-to-day life and they are now actually demanding more automation and less paperwork from the government.

Currently, decision makers are stressing the fact that the application must be extended to cover all secondary-level certificates to enable all students to benefit from it.

Through its public-private partnership model, the project is self-sustainable with no need for additional funds from the national budget, and might even be a source of national revenue one day if companies continue to compete fiercely to win the sponsorship.

The e-government portal is constantly being upgraded and improved, as well as its security measures, which all lead to a better service level being offered, increasing its credibility and the end user's satisfaction.

The service's wide success prompted other government organisations in Egypt to request the same service for their graduates or employees, such as the

“Doctors’ Charging Service” which covers more than 120,000 medical doctors annually.

This system’s development has had many benefits, but among the indirect benefits is the accumulated experience in business model formulation and implementation, which would benefit the government in many other e-government projects.

- **Outcomes of University Enrolment Project case data analysis**

Figure 6.3 shows that the core idea behind the project is to provide a new and better electronic service that benefits a large segment of the Egyptian population. This service leads to greater flexibility and comfort which in turn increases citizens’ satisfaction, saves time and also reduces the costs of providing the service which produces savings for both the government and the public. The general reason for taking this project initiative is to increase government performance and create a unified system capable of improving the delivery of services, increasing efficiency and providing high-quality service delivery.

The general project manager confirmed these benefits as he stated:

> “The electronic university enrolment offered advanced features to the Ministry of Higher Education like the transfer and geographical distribution, which took years previously. Each student had to join his/her university (no matter where it is located) for at least one year before applying to transfer to another one (and that is only if he/she receives high scores). After the introduction of the new system, a transfer phase is open to students who want to join the same faculty in another governorate if their score allows them to do so. This creates a lot of savings as students need suitable accommodation away from their families which burdens them with extra expenses, and burdens the government with expenses for hostel establishment and operation costs/responsibility as well as means of transportation.”

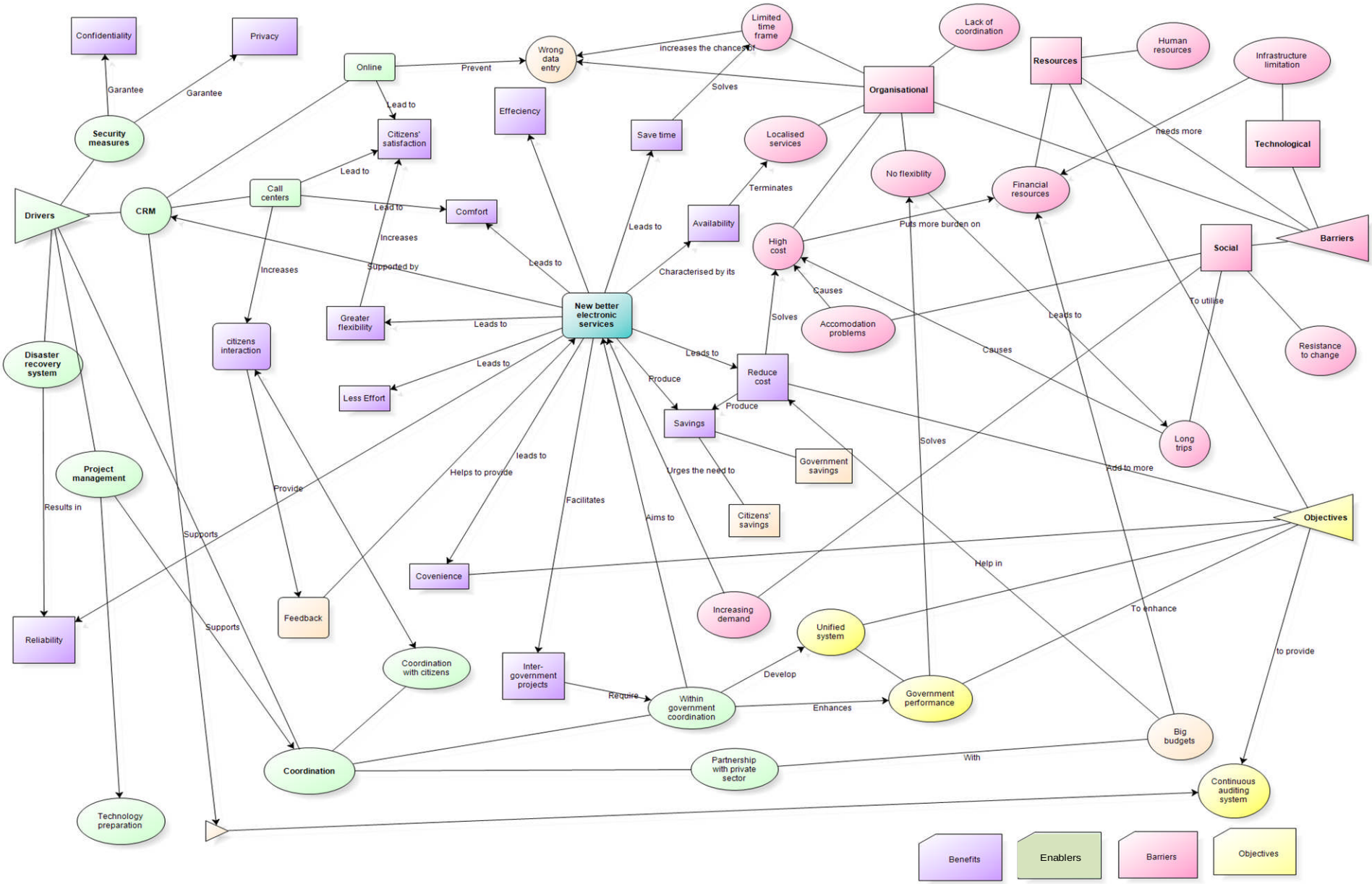


Figure 6.3: University Enrolment Case Project Network

Analysis of the data obtained from the case project revealed that it faced a number of barrier groups throughout its implementation. Such groups include technological barriers which involve infrastructure limitations and technological competencies. This point has been confirmed by one of the MSAD advisors of strategic projects as he said:

> "We were working with 6 mega bandwidths system, the problem was that the grids couldn't allow all the entries all at once. We could not stand any drop in the system because there was not any alternative for the student. But, the reliability of the service was not very high."

This infrastructure limitation appeared to need more financial resources to be overcome. On the other hand, the high cost of providing the service (before the implementation of the project) put an extra burden on the government's financial resources which required the provision of extra budgets in order to solve the problem. This situation highlights the importance of partnerships with the private sector as an enabler for this project. This partnership solved two of the main problems: secured a budget to enhance the financial resources, and solved a part of the technological limitations. This issue has been justified by the Gateway team leader of the Project:

> "The grids couldn't allow all the entries all at once (6 mega bandwidths). What we did is that we allowed many Egyptian private websites (link.net, egynet.com and masrawy.com) to publish the results. So every website had its own share of the load. This point was also taken into consideration when we designed our portal on the Egyptian government gateway in 2007. By then we had two things: grids from different companies, and high bandwidths (60 mega). Therefore, we didn't have any problems when the number of hits increased at any time. The highest bandwidth we had to use over the past years was 40 mega. We have extra bandwidth till 60 mega. So since 2007, we have the ability to declare the results on our website exclusively."

Another result of this technological limitation is the awareness of the importance of setting-up a disaster recovery system for the web-based application with a sufficient number of grids and high redundancy rate hardware. This is

considered as another enabler for the project. Internet connections to the application were secured from four different service providers and different central offices. Severe security measures were also taken, as the project had the main gateway and an alternative gateway in another governorate. If anything goes wrong, the applications switch from the main to the disaster recovery site.

In addition to the previous technological and resources barriers, it appears that the organisational barriers played a role in hindering the implementation of the project. This includes the need to make hundreds of thousands of entries within a limited timeframe and that the whole process of university enrolment has to be carried out between the time of declaring the results and scores and before the academic year started. The localised systems and incomplete databases affect to a great extent the start of the project implementation as well. However, the coordination either with the private sector, as mentioned earlier or with other governmental entities has helped to overcome such barriers. Also, this would help to develop the unified systems and enhance the government performance. The final form of coordination is the coordination with the citizens themselves which increases their interaction and acceptance of the new service and subsequently their satisfaction with it.

It is also obvious from the analysis that the system's reliability, convenience and efficiency are the project's foremost success factors, without which it would have surely failed. It was due to these high-level factors that it was very well-received by the public. Another important success factor for the project is the effective project management by MSAD which coordinated the different stakeholders in the project.

The university enrolment application project is the result of the fruitful co-operation of five government organisations: Ministry of State for Administrative Development, Ministry of Education, Ministry of Higher Education, Ministry of Communications and Information Technology, and National Sports Council. This promotes cooperative and integrated work among them or groups of them in the future.

The relevance of the data collected and generated in the university enrolment service opens a door for many electronic services for universities, students and decision makers. Such services include hostel enrolment, students' transportation support, university student affairs, and many others which would help decision makers plan and utilise the available resources in a better way.

The project's success and the Egyptian e-government portal have enabled the covering of more specialisations, such as general certificates and doctors' charging service (which is executed 11 times annually) which eliminates the need for the external interfaces, multi-systems and applications previously deployed. The same module can be used to deliver more services with very few changes and only minor investment.

To conclude, the project has many impacts. The public in Egypt are now much more open to e-government services (compared to how they were before). University enrolment was the choice of a service to be undertaken in order to start building trust in the initiative. The project provides additional benefits that range from standardisation and lower maintenance by means of solution unification for more sectors/services (one system instead of multiple systems) to easier, greater and more accurate reporting capabilities utilising one database while reducing error and increasing efficiency, credibility and accessibility for beneficiaries to their own records. This project also provided a good example of cooperation between the public and private sector for better serving the public and reducing the government's expenses which can then be used in other sectors.

6.2.2 Case Study 2: The Family Card System

This project is considered to be one of the Egyptian government's projects aimed at fostering participation in policy-making decisions through innovative mechanisms, improving the delivery of the services and enhancing transparency, accountability, and responsiveness in public service.

The essence of the project is to enable government – policy makers and public officials – to better interact with the public, particular individual citizens, and

allow citizens to better express their needs through electronic means, while enabling them to participate in and influence policy making, comment on policy implementation, provide feedback on government services (on and off-line services) and file complaints. This is done by introducing a unique idea, a distinctively new approach to problem solution through the application of new knowledge management techniques, and unique implementation design, for greater participation of citizens in policy-making decisions, particularly the poor.

The family card system provides timeliness, courtesy, access and client-orientation in public service delivery, and includes the availability of e-government services on time and in ways that are more convenient to the public, quick processing of applications or claims, reduction in the amount of paperwork and other activities citizens must perform in order to demonstrate compliance. It also utilises documentation in various forms which can serve as evidence of a government’s conformity to legal, procedural and fiscal requirements, and improves the processing of complaints and handling of grievances through e-applications.

- **Status before the project**

The project was created to deliver a set of services geared towards the benefit of Egyptian families. Currently, there are three services that have been implemented, namely food commodities, social pensions distribution and health insurance. There are other ongoing services, for example, infants' milk, and petrol. Other services are planned to be added, such as transportation fees, etc.

Before the project, the process of delivering food commodities was completely manual and paper-based, which led to a lack of follow up, high leakage ratios, and inaccurate delivery of the commodities to deserving families. The process implied that each group of targeted families to receive food commodities was linked to a specific grocer. Accordingly, each grocer receives, on a monthly basis, the products corresponding to the summation of commodities for all families linked to that grocer, referred to as a full quota, even if the grocer did not deliver all such quotas to deserving families. Each family is provided with a

paper card to receive the relevant monthly commodities. The family used to go to the grocer, receive the commodities, and then pay for what has been received and sign the grocer's paper document. The subsidised commodities are cheaper than the market prices, because they are supported by government. Eventually, these indispensable commodities are not monitored and the grocer can sell them outside the system. The grocer prepares a monthly report stating his quota, revises it with the associated supply office, and gets approval for the quota to be delivered to the deserving people and eventually that what he will receive is correct. Then, the report goes to the wholesaler to receive the grocer's quota. So, the grocer receives, on a monthly basis, the full quota regardless of whether he actually delivers it to the citizens or not.

Another weakness of the manual and paper-based system is when the grocer receives his full quota from the wholesaler. He can illegally and informally receive more than the full quota, in agreement with the supply office.

On the other hand, any changes that occur in the family data (new born insertion in the paper card, family address change, grocer change etc.) should be registered on the paper document in the supply office, manually. The manual system is time-consuming and susceptible to inconsistency of registries, corruption, and mistakes, not to mention the large storage space needed for filing such documents.

Similarly, the delivery of social pensions suffered the same shortcomings before the project (same process and same disadvantages). The people receiving the social pension were registered and received the service manually. However, the social pension is given to families according to certain social criteria which, in the manual system, can be forged; consequently, non-eligible citizens can benefit illegally from pensions. This was the same case in the delivery of health insurance; it suffered the same weak points before the project, being subject to bad manipulation and weak provision of the service.

Hence, the Egyptian government has adopted smart cards (shown in Figure 6.4) as a tool to provide various social and support services (food commodities, social pension, health insurance, educational support) to underprivileged citizens. Thus, the government relied on the use of information and communications technology as a means to manage and control the delivery of social services to citizens. Meanwhile, a database for the Egyptian family is implemented to support the decision making related to subsidised services.

Figure 6.4: The Family Smart Card

- **<u>The key benefits resulting from the project</u>**

The project guarantees delivery of the services to underprivileged citizens through a computerised application, up-to-date database, and efficient system. It establishes monitoring, control over infiltration and loss in support, and allows the creation of a civilised environment through which underprivileged citizens can acquire their services. It achieves transparency through the establishment of clear and neutral processes for acquiring and managing subsidies. The project includes the building of an integrated family database to support the system with relevant statistics, which lead to various benefits. Such benefits include access to data, information, and statistics needed to analyse the behaviour of the Egyptian families, accessing accurate, up-to-date, and timely data and information for future support planning, and supporting decision making which targets a better quality of living. Hence, the government can use

such a database to identify social problems and consequently exert efforts to enforce Egyptian families to change their living style. This can happen through eradicating illiteracy, and working against unhealthy habits.

In addition, the project includes a call centre, with low cost call fees, to allow citizens to call and explain their problems, and provide remarks, comments and recommendations that may lead to the improvement of the system. Accordingly, the citizens have the chance to participate and better express their needs through electronic means leading to influencing policy-making.

The project was implemented in phases. Phase 1 consisted of a pilot project in the Suez governorate serving about 85,000 families in 2005. The system was outsourced, customised, deployed, and the processes were reviewed, refined and monitored. Accordingly, savings were around 22% of the total food subsidy for Suez. Another 15 governorates implemented the new project, and there were about five million cards working steadily.

In Phase 2, four governorates were covered by the system with more than two million cards working steadily. In addition, the social pension service was added to the smart card, in this phase. Phase 3, covering the remaining governorates was completed in mid 2010, with more four and a half million cards.

The Health Insurance service has been added to the card for the Suez governorate (as a pilot) and started working from January, 2010. Moreover, the culture of using smart cards, which is one of the worldwide genuine delivery mechanisms, is expanding in Egypt. Hence, Egypt's technological pointer is subject to improvement.

- **<u>The project stakeholders and implementers</u>**

The project is owned by the Ministry of Social Solidarity (MSS). The Ministry of State for Administrative Development (MSAD) proposed, studied, analysed, designed, contracted and is currently monitoring the implementation of the project. The stakeholders of the project include MSS, MSAD, and Egyptian society.

MSAD has outsourced the contracting approach, for the first time in its implementation, to a consortium which is responsible for the following:

- Issuance of smart cards.
- Technical support to system programmes and applications.
- Hosting of family card database.
- Providing service provision centres.
- Providing call centres.
- Applying networks and communication lines.
- Training of civil servants responsible for managing the system.
- System management.
- System execution and maintenance.
- Provision of necessary applications and tools (Server and Point of Sale applications and tools).

- **<u>The project implementation</u>**

The strategies used

The Egyptian government adopted some strategies and objectives to implement the project. Among these strategies is the belief that big projects should start with a pilot to measure their feasibility before being generalised all over the country. Also, outsourcing the implementation, operation and maintenance of the system is one of the important strategies. In addition, the government employed only one card to support all support services and ensured that the citizens should not bear any extra costs. Another essential strategy was centralising the design and decentralising the implementation. The system is designed once and implemented as a pilot; then it is deployed in other governorates in Egypt with a little customisation according to each governorate's requirements. Service provision is decentralised by creating untraditional outlets to fulfil the citizens' needs. Before the project, the social pension was delivered to the citizens from the social units only, which led to

long queues and crowds. After the implementation of the project, other outlets like banks branches, ATM units etc. are used for pension delivery.

The key development and implementation steps and the chronology

The Egyptian government has planned to enlarge and empower the social pension, subsidy of commodities, health insurance, and other services to cover underprivileged families. The family card is geared towards achieving such a goal. As a key development issue, MSAD has followed the spiral methodology to implement the system' development lifecycle. Accordingly, the key development and implementation steps were:

- Establishing an electronic database for Egyptian families including underprivileged families and the transactions performed for each type of service. Each family record in the database is linked to its appropriate support service.

- Defining the overall system's technical architecture, and defining the various technologies and implementation strategies.

- Preparing a top-level design of the system, and defining the system configuration.

- Developing, for each service, an application to manage the service database to support provision of the service to the deserving family.

- Issuing multi-application smart cards for services delivery.

- Building the network infrastructure of the system that allows all stakeholders of the service to communicate.

- Building service centres that will manage the database updates according to predefined rules. They also manage the replacement of damaged and lost smart cards. A formula defining the number of service centres corresponding to the number of families required to be covered has been proposed and implemented accordingly.

- Building a call centre to receive the citizens' requests and complaints. The call centre is equipped with a complaints management system that traces the received complaints until fulfilment.

- Training the system users, which are the grocers, the supply offices' employees, the wholesaler employees, and the service centres' staff. The training includes both theoretical and on-the-job training sessions. It covers training on various system applications, besides operational training, system administration training, periodical maintenance procedures, and troubleshooting training.

- Hardware and software installation and overall system launching.

- System testing. Different types of testing have been applied through the lifecycle of the system implementation, namely unit tests, program tests, integration tests, performance tests, loading tests, installation tests, acceptance tests, and interoperability tests. As the system has been implemented in phases, new applications should be interoperable with the ones developed and deployed in earlier phases. Finally, as the government plans to allow the system to deliver the social pensions from different outlets, interoperability tests are applied with the ATM units to ensure that the system is ready to use ATM units when needed.

- As mentioned earlier, the implementation was divided into three phases. Phase 1 started with a pilot in one governorate, followed by implementation in other 15 governorates. In phase 2, it was implemented in another four additional governorates; in phase 3, the implementation covered the remaining nine governorates. All in all, a total of 11.7 million Egyptian families (around 64 million citizens will be covered). Noting that, to avoid monopoly, each phase has been implemented with a separate vendor.

The main obstacles encountered and how they were overcome

The project has encountered various obstacles. One obstacle lies in the culture of the grocer who used to work manually and was quite reluctant to use the automated system. Similarly, the supply office employee who used paperwork along with having no technical background represented a challenge to the new system implementation. To overcome such obstacles, two types of training were applied: theoretical and on-the-job training. The objective of the training was to make the employees comfortable with the automated system. However, after studying the cash flow of the traditional process it was calculated that by using the old system, the profit of the grocer would be limited to 1.5% only. Thus, to create a win-win case, the government agreed to set incentives for the grocer for each card's commodities delivery monthly, hence increasing the grocer's monthly profit.

Another obstacle lies in the culture of the citizen who is used to dealing with paperwork and may never have dealt with electronic equipment, making it difficult for her/him to become acquainted with the new system. This obstacle has been overcome by setting a simple and clear system interface design. The interface uses codes and numbers rather than commodity names, the process procedure includes a limited number of steps, in addition to preparing a poster describing the process needed by the citizen when s/he receives her/his commodities at the grocery store.

In addition, getting to know the citizens' feedback, complaints, and comments, was a major obstacle that was encountered. For this specific issue, a dedicated call centre was designed and installed as an integral part of the solution. The phone number of the call centre is written on the back of the smart card together with a set of recommendations for the citizens.

Another obstacle related to citizens, was how to force them to keep their smart card and PIN number away from the grocer to avoid illegal transactions. This has been solved through setting up both a media campaign and awareness sessions.

With regard to the grocery store environment, the Point of Sale (POS) used is often located amongst packs of sugar, oil, flour, and other types of commodities. This can make the POS liable to be intentionally or unintentionally damaged or broken by the grocer. To overcome this problem, the project team set stricter specifications for the POS design and at the same time, tailored a cover for the POS to protect it from being contaminated.

Resources used for the project

MSAD has allocated four different resources for the below-mentioned purposes:

- Database Technical Unit (DTU)

This is a unit dedicated to electronic database activities management. The unit is responsible for electronic database design, validation and verification procedures. In addition, the unit proposes and implements the criteria set to link the family database with other national databases for further validation and verification purposes as well as fulfilment of other citizen support services. Moreover, the unit accepts the final form of the electronic database, defines and manages system lookup tables, and does the appropriate data conversion required for the updating of the smart card system.

- Distributed Team (DT)

The Distributed Team is a contracted team (MSAD), dedicated to managing the implementation of the project activities amongst different Egyptian governorates. It is responsible for enforcing the project regulations and implementations within the governorates. This includes follow up of data entry procedures, fulfilment of smart card system service centres, supply offices automation, and groceries automation specifications. Another important responsibility of the DT is ensuring the right and smooth distribution of smart cards to citizens, as well as making sure that the PIN mailer distribution is proceeding correctly. After establishing the service, DT responsibility extends to monitor and guarantee the quality of the service provision. The DT sets

periodical coordination meetings in MSAD with project managers and their teams to ensure that the workflow is proceeding as planned.

- Family Project Task Force (FPTF)

The Family Project Task Force is responsible for DTU supervision, DT follow-up and ensuring that the overall system components are correct. It also manages and ensures the follow-up of various system standards, such as system development lifecycle, data entry and conversion procedures, fault resolution and analysis, performance evaluation activities, and smart cards versus PIN mailer restrictive distribution procedures.

- Project Management Group (PMG)

The PMG is responsible for the follow-up of all the aforementioned resources, as well as managing other project procedures, such as financial, management, and technical issues. It manages setting incentives for grocers and supply office employees for their extra efforts. It manages the contractual aspects of the project as well.

- **Sustainability and transferability of the project**

The project is sustainable and transferable since a set of factors were taken into consideration throughout the smart card system implementation.

The first factor is the running cost of the system. Implementation of the project was outsourced. This model proved to be successful since the contracting cost of the entire project for subsidised food (which is almost 10%), is less than the savings (which is almost 22%), which means a net reduction of 12% in the food subsidy budget; meaning that cost-wise it is sustainable. Added to that, the use of the smart card in other social and support applications, and the ability to successfully target underprivileged families, makes it quite clear that the return on investment for this system is quite substantial.

The second factor is the technology itself, meaning, the use of multi-application smart cards to add more services over time in addition to the installation of a

backup/alternate site, which allows for system restart if the main location has failed or is destroyed. System security against unauthorised access takes place through restricting access rights and establishing various protection mechanisms (e.g. firewalls). Other factors are the system's expandability and interoperability. The system is fully fault-tolerant, services are provided by more than one supplier covering geographically all of Egypt, and specifications/tests have been developed to ensure interoperability among different suppliers (different smart card manufacturers but the same readers and art work and logo). The system is also fully documented for sustainability.

The third factor is the awareness and media campaign stating that the system is targeting all Egyptians. The fourth factor is the phased implementation plan of the system. This plan allows the government to monitor the implementation progress and citizens' reactions, and recover any possible shortcomings.

The system is quite transferable due to its similar implementation in many countries in the region and Africa. At the same time, it is very well-documented, its impact can be clearly measured, and in addition it is modular in structure, making its sponsorship much easier.

- **Outcomes of Family Card System project case data analysis**

In this project, Figure 6.5 shows that the coordination as an enabler helps to overcome the barrier of changing culture for both service provider and service recipient. The participation of ministers of both MSAD and the MSS make people understand to some extent and convince them that the project is worth trying. The same enabler (coordination) ends the barrier of lack of cooperation of some governmental entities with the project and/or the lack of cooperation that sometimes exists among employees in different departments. Through the same enabler, the objective of establishing and integrating electronic national databases could be attained. The coordination between different entities in the same government makes it easier to exchange data among them and helps fast completion of the required databases.

Furthermore, it can be seen that the problems faced by the family card system projects were spread along the life-time of the project starting from the budgetary problems (even before the commencement of implementation), as the project manager explained:

> "The main barrier which impedes the implementation in the rest of the country is the funding. When we wanted to start working in other governorates in parallel with the provision of the subsidised food commodities, we find the budgets of the pensions are not available. So the project stops accordingly. The budgetary problems existed even before the start of the project and we suffered from them and they caused some delay in some services projects."

Also, most of the interviewees from this project stressed the lack of cooperation among the different governmental departments involved in the project and the conflict of priorities among ministries as major problems facing this particular project. This point is supported by the executive project coordinator as he explained:

> "When we ask for a budget from the ministry of finance, they tend to be lazy in approving the budget right away. And they don't provide the project the assigned budget all at once. Instead they pay it in instalments and some of these instalments get delayed resulting in the interruption of the project's progress. Some ministries do not cooperate with the project. I am guessing at several reasons why. Maybe providing these services were not the priorities of such ministries, or the vision of the project was not clear enough for them."

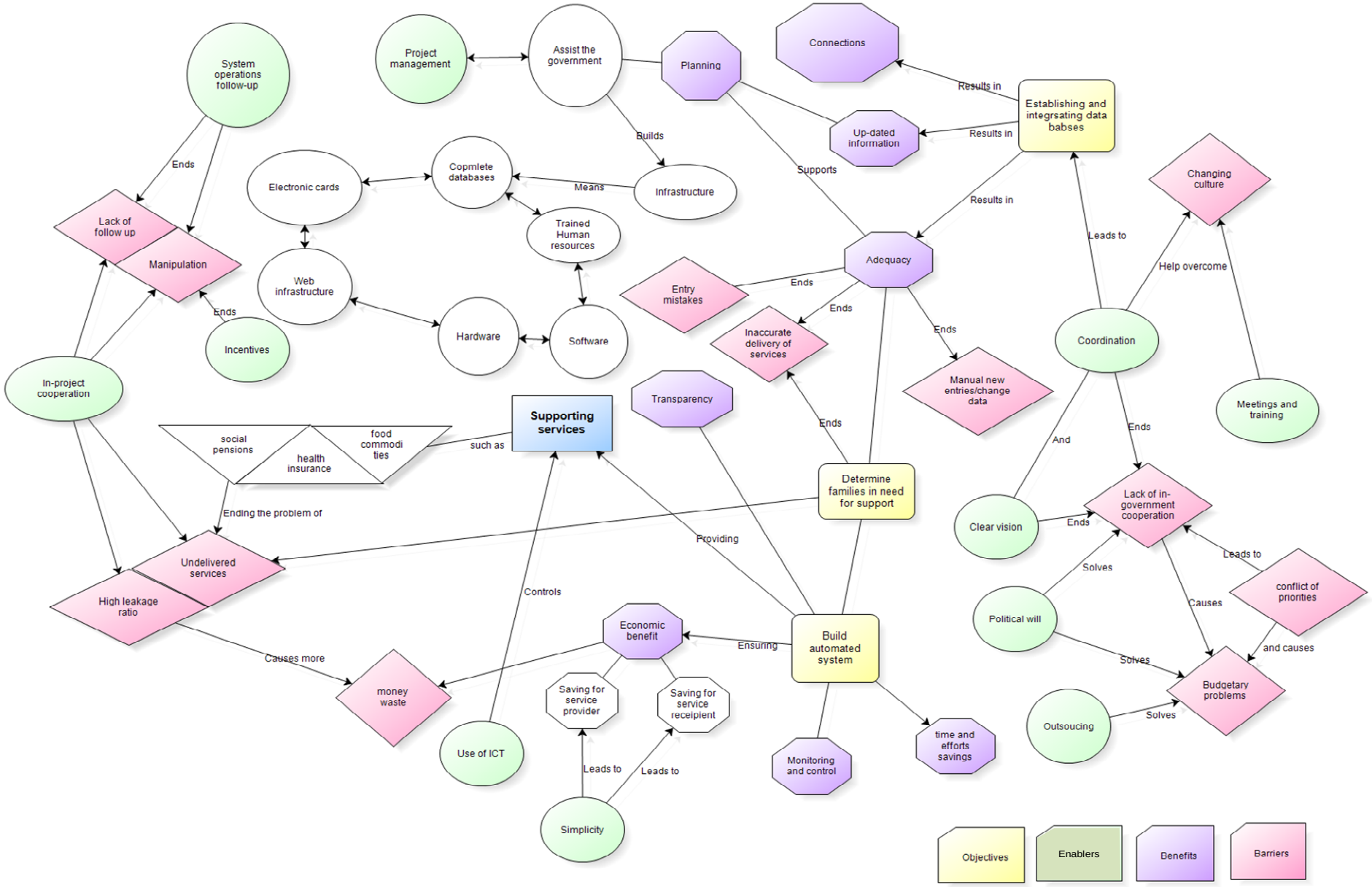


Figure 6.5: Family Card System Case Project Network

This matter was also confirmed by the advisor of strategic projects in MSAD:

> "The service of providing the health insurance on the electronic family card was postponed one whole year for that reason. And there are many services we want to apply but we cannot because the related organisations are not convinced they would benefit from such applications. So the conflict of priorities among organisations and the degree of other organisations' support and belief really have great effects on the progress rates."

Finally, it can be noticed that these problems are related to different groups of barriers. This means that efforts to overcome these bundles of barriers have to go in different directions (organisational, resources, and cultural) for the guaranteed success of the project. These efforts should include setting some measures to control dealings with the smart card and organisation of grocers' work. Actions that could be taken include the cancellation of their licence for manipulating grocers asking for additional money from the beneficiaries without having the right, in addition to the grocers who keep smart cards for consumers to exchange the goods they have on their own card. The citizen's smart card should be also cancelled if he/she leaves it with the grocer.

The analysis of the project data revealed the importance of completing and connecting national databases to each other and providing useful applications for the citizen, which have impact on the ease of his/her life so that s/he does not need to fill in forms in the future. This means that the application of this system helps the issuance of similar cards for different applications, such as real estate cards and business premises cards. As the family card carries many applications such as social security and health insurance in addition to food commodities, the project also highlighted the importance of the identity card in applications such as the electronic signature certificate, driving licence, and weapons permit.

Also, there are clearly a number of impacts of the system that can be listed:

- Reduction in the cost of food subsidy (due to lower leakage percentage).
- Better targeting of underprivileged families (since all relevant data is stored on an electronic database, it is easy to identify it).
- Better decision making. For example, if statistical data show fewer tendencies to use certain items, other highly demanded items can replace those items.

Major lessons learnt can also be summarised as follows:

- Large projects should start with a pilot project to prove the success of the initiative even if on a smaller scale, to discover problems, rectify them and create a win-win case with all stakeholders.
- Social considerations of the project should be considered prior to technical aspects. Citizen considerations and requirements should be taken into account from the start before the planning and implementation phases.
- Capacity building of different stakeholders is crucial to the success of the initiative. The initiative covers training for grocers, supply offices employees and service centres employees.
- Considerable effort is required to change the citizens' culture to use new technologies for service delivery. Public symposia for each new implemented governorate were executed, the system was explained and a round discussion for all the participating entities was conducted.
- The key performance indicators of the system should be clearly stated and followed up.

6.2.3 Case Study 3: Ministry of Justice Project

The project is one of those aiming at improving the delivery of services. It involves transformation within a large framework rather than incremental improvements. Innovative methods, tools and techniques, in the context of the government, are applied to themes such as modernisation through the provision of e-government services, change of organisational culture, administrative reforms or the overhaul of government service delivery procedures and the application of knowledge management processes. In addition, the project provides timeliness, courtesy, access and client-orientation in public service delivery. It includes the availability of e-government services at times and in ways that are more convenient to the public, speedy processing of applications or claims, reduction in the amount of paperwork and other activities citizens must perform in order to demonstrate compliance. This also incorporates streamlined processes, reduces red tape, and improves coordination and other measures, increasing efficiency through the application of knowledge management processes.

- **Status before the project**

The Egyptian judicial system is based on European, primarily French, legal concepts and methods. It is split into different kinds of courts: constitutional (Supreme Constitutional Court), administrative (Administrative Judiciary, State Council, and Supreme Administrative Court), criminal and civil (Courts of First Instance, whose verdicts can be petitioned at the Courts of Appeal, which in turn can have its verdicts overturned by the Court of Cassation).

In spite of the great efforts performed by the Egyptian Government for developing public governmental services, there still exist many difficulties facing the judicial procedures and services. These difficulties result in numerous problems faced by members of the public who deal with the Egyptian judicial system (citizens, businesses and foreign investors). It also negatively affects the business environment resulting in delays in implementing national development plans.

The main judicial systems problems and obstacles can be summed up as follows: judicial procedures are lengthy (some cases can take years to reach a verdict), ambiguity of procedures (as perceived by the public), reliance on ineffective and inefficient procedures, lack of monitoring and control of internal processes, low level of service offering to beneficiary community, need to process an ever growing large number of cases, large size of backlog (dating back up to 20 years at times), inability to follow up the execution of rulings, and unequal allocation of human and physical resources.

The following is a set of statistics expressing the main judicial difficulties: according to the estimates carried out by the Judicial Information Centre (JIC), the total number of yearly registered cases for all courts reaches 1.2 million cases (800,000 at courts of first instance, 300,000 at appeal courts, 100,000 at the court of cassation); the total number of cases handled yearly for all courts is about 15 million. This number is expected to consistently increase, since the overall ruling capacity does not exceed 800,000 cases annually; the capacity of collected claims resulting from fines and contraventions is about 20% of the overall claims; the accumulated number of cases at the Experts Authority is increasing annually.

Obviously, there were many problems with the system in place, which according to the statistics were not about to be resolved any time soon as the number of accumulated cases was increasing annually instead of decreasing.

- **The key benefits resulting from the project**

The Judicial Procedures Development Project had four main objectives: development of all judicial procedures and reducing the administrative burden; consequently raising the efficiency and effectiveness of judicial systems at all levels including all support authorities and departments within the Ministry of Justice and securing monitoring and control tools and procedures, creation of a national judicial cases database and offering quality services through multiple delivery channels to all stakeholders including citizens; imposing complete transparency by simplifying the judicial procedure and its proper comprehension

by all stakeholders; strict support and enforcement of legislation by increasing of the rulings execution capacity and linking the judicial cases database to rulings execution authorities.

The project had numerous achievements including re-engineering judicial public services' processes (leading to such impacts as reducing the case initiation time for first instance courts from 3 days to 13 minutes), and introducing case management systems to all different kinds and levels of courts in Egypt's judicial system (over 10 different court systems). Case management systems entail registering the case starting from case initiation and supplying the plaintiff and defendant with a PIN code that he/she can use to check the case status online, down to viewing the final ruling, and applying for any required documents, as well as electronic archiving of case documents.

The project's key achievements can be summed up as follows: developed a case management system for all different court categories and deployed the system at 12 courts in total, so far; automation of internal support departments (e-archiving, published rulings, financials, summons servants, certificates, documents and certified copies) and external support agencies (Experts Authority and Forensic Medicine Authority) as well as the Public Notary Authority (in which you can get a power of attorney within 10 minutes – reduced from 1 hour); integrating a case management system with: prosecution units, the Judicial Information Centre, National Judicial Case Database, Experts Authority, Forensic Medicine Authority, as well as the National ID database to link plaintiffs and defendants to their accurate personal information.

On the public services front, the achievements were as follows: introduction of new service delivery channels (all court services can be accessed through www.egypt.gov.eg – the national portal, some mobile services are available on the national WAP portal, services are also available at over 500 public service kiosks available at remote areas all across the country); services' business processes were reviewed and improved and delivery times were reduced.

The impact of the project was perceived by beneficiaries, as service delivery times decreased exponentially and for the first time in the last 50 years, there were no accumulated cases starting from the judicial year 2008-2009. On the other hand, some of the backlog was even resolved within this judicial year. The feedback received from beneficiaries is mostly positive, while the complaints received are used as a basis for improving those services.

Beneficiaries praise the reduced service costs and the decreased interaction with civil servants which reduces the possibility of corruption. Also, manual systems were replaced by automated systems that leave very little space for illegally fixing a court date or tampering with case documents. Feedback also recognised the improved service at the newly established service outlets, as beneficiaries no longer have to go one or two flights up all the way to civil servants' offices to acquire services.

And although the uptake of online services was not very high (250,000 requests/annum – as expected, because of the not so high Internet and PC penetration rates), those who have used them were most impressed. Beneficiaries were able to enquire about case statuses and pending issues, acquire e-documents and request hard copies of verdicts or other such documents. Such documents were usually delivered at the court within 15 days of application. This was reduced to courier shipping of requested document(s) (with the innovative model of cash-on-delivery or the online payment option) within 72 hours of request submission.

- **The project stakeholders and implementers**

The project is owned by the Ministry of Justice and is led by MSAD. The internal processes and services within the judicial procedures development project are owned by their respective entities. That includes all different levels of courts involved, as well as supporting bodies such as the Experts Authority and the Forensic Medicine Authority, in addition to the Public Notary Authority and Prosecution Authorities. This is all overseen by the Ministry of Justice. However, the courts and prosecution authorities do not report to the Ministry of Justice,

which increases the number of stakeholders involved. Prosecution authorities report to the Attorney General, while Courts report to the Supreme Justice Council.

MSAD played a crucial role in this project as the project manager. With many different stakeholders such as the developers, testers, Ministry of Justice, different courts, supporting bodies, as well as hundreds of thousands of citizens and lawyers that deal with courts and their services every day, this role was of upmost importance.

The Judicial Information Centre plays the central data centre role for the Judicial Procedures Development Project. It is the central hub which hosts all the information from the courts, and other relevant bodies, with the exception of support functions, such as the Experts Authority and Forensic Medicine Authority that both host their own applications and databases as they do not offer public services. It also plays the role of the facilitator and contact point with the Ministry of Justice and all other relevant judicial bodies involved in the project.

In addition, the whole project is carried out within the framework of a rebate agreement with Egypt's multinational partners, Microsoft and IBM, as well as their local private-sector partners. Employing such expertise in the field of technology has definitely contributed to the success of the project.

A cooperation protocol was signed off between the Ministry of Justice (as the Ministry overseeing judicial public services and support agencies) and the MSAD (as Egypt's focal agency for e-Government). A special high-level committee formed by the Minister of Justice, the Minister of State for Administrative Development, and their deputies and other relevant personnel, was set up to follow-up on the implementation of the project.

- **The project implementation**

The strategies used

The most important strategy that was followed was setting a clear vision, along with its relevant objectives, and aligning all relevant stakeholders to that vision. The Judicial Procedures Development Project's main vision can be elaborated as follows: an efficient and powerful judicial system, relieving the public dealing with the courts systems from all obstacles and complicated procedures, and offering them state-of-the art services; increasing the case handling capacity at all court levels and clearing all queues and backlogs; as well as enhancement of the rulings execution capacity by the introduction of appropriate mechanisms and simple procedures.

Among the most important strategies was the business process re-engineering of the services courts offered to attorneys, citizens and other plaintiffs, and defendants and their representatives. Processes were scrutinised by administrative burden reduction experts, and unnecessary steps were removed and/or optimised.

Several other strategies were employed in the implementation of the project. Among them was securing the top management's support at all relevant bodies, ensuring smooth and timely implementation of the project. Another main strategy followed was capacity building of the civil servants that are going to use the actual IT applications, some of which were computer-illiterate at the start of the project.

Outsourcing and utilising the expertise of multinational and private-sector ICT and institutional development partners was yet another cornerstone strategy. Microsoft and IBM provide a percentage of the cost of software licences purchased in the form of development and consulting services.

Other strategies and tactics include: compilation and documentation of all judicial procedures; co-ordination among all entities participating in the judicial procedures development project; considering all efforts and studies carried out

nationally or internationally; implementation of state-of-the art automated procedures through the adoption of information and communication technologies; linking judicial procedures and rulings to the national ID number; creating service-offering bureaus and outlets; developing human resources through continuous education and training; development of the work environment; making use of specialised experts and consulting firms to carry out the needed specialised studies.

The key development and implementation steps and the chronology

As mentioned earlier, the project was initiated by MSAD as the Ministry with the mandate of overseeing the e-government implementation in Egypt. MSAD approached the Ministry of Justice (MoJ) (who had already mounted an effort to consider developing a case management system at courts of first instance and appeal courts – through its JIC) and the Supreme Judicial Council (SJC) with an offer to introduce ICT to their processes and services, as well as their respective agencies, in order to achieve prompt and speedy justice. Both the MoJ and the SJC welcomed the project and a cooperation framework was signed-off in February 2008. The framework identified a special high-level committee formed by both Ministers and other relevant members, to oversee the implementation of the project.

A senior project manager was appointed at MSAD to lead the project. This project manager was the central node to all operations within the project. Relevant focal points were also identified within every judicial/support organisation.

The project scope was defined and set to include all types and levels of courts, prosecution offices, support agencies and other relevant bodies. MSAD's strategic technology partners, Microsoft/IBM, were brought in to oversee local development partners, as well as finance the development activities as part of the rebate agreement between them and the Government of Egypt, which returns a percentage of software licence costs in the form of development and consultancy services.

Institutional development experts went on to analyse the business processes in all judicial organisations, ahead of the requirements gathering for information systems, so as to implement improvements ahead of information systems deployment. They followed several different methodologies in their assessment including shadowing and mystery shopping.

The scope was set for courts (of all types and levels) to include a case management system, internal workflow automation system, integration with all relevant judicial/support bodies and National ID database, as well as setting up service provision outlets (one-stop shop) within courts instead of in-office services. The scope also entailed online provision of all court services. A similar scope was set for prosecution offices, integrating their applications with courts, the Judicial Case Database, and the National ID Database.

Support agencies' (Experts Authority & Forensic Medicine Authority) scopes were set at case management systems, internal workflow systems, and integration with all judicial bodies that they serve.

The JIC was identified as the future central hub for all judicial applications, including the Judicial Case Database, integrating with courts, prosecutions offices and support agencies.

The project was split into two tracks running in parallel, with the first aimed at developing judicial procedures at courts and public prosecution, developing systems and procedures in support authorities and departments within the MoJ, enforcement of control, transparency and accessibility procedures and systems, developing processing and services channels dealing with judicial procedures, developing highly qualified human resources capable of managing the new proposed systems, development of the work environment, and creation of a national judicial case database, as well as the roll-out and deployment of new systems in different project elements. The second track entailed the enforcement of ruling execution procedures, securing the linking of all executive bodies within the country to the national Judicial Case Database.

Institutional development experts delivered their reports, and their recommendations were implemented. In parallel, extensive training courses had started for civil servants at different judicial organisations. Next, the development partners became involved, and developed their respective components of the project. The project is currently completed at 15 different courts (of different types and levels), as well as some of the support agencies. The roll-out plan covers all 8 appeals courts, 19 satellite appeals courts, 28 courts of first instance, 39 satellite courts, 5 family courts, 113 family prosecution offices, and both support agencies. This is all expected to be complete by mid-2012.

The main obstacles encountered and how they were overcome

Many challenges were faced in the project. The most important ones were the digital divide, and the computer illiteracy and resistance to change of civil servants, who felt threatened by the development. Some even thought they were going to be replaced by younger, computer-literate civil servants. This was overcome by developing extensive and engaging IT training courses, over a long period of time (some even reaching two months). Those civil servants were engaged in the requirements gathering and design phases of the case management systems. A sense of ownership was seeded inside them. At the end of the implementation they were the most keen to make it a success.

Another strategic challenge was the lack of qualified and skilled human resources/positions, within judicial offices' structures, to maintain information systems. Top management support was utilised to secure the required budget for hiring some of the personnel. Additional budget was used in creating service contracts with private sector partners to provide periodic updates and maintenance for information systems.

Interoperability and multiple service delivery channels was also a challenge from a technical perspective, as the information systems had to be integrated with numerous other agencies. This was overcome by utilising strategic partners such as Microsoft/IBM, which were the technical consultants for the

project, in setting interoperability and multi-model standards for the local development partners, in order to ensure smooth future operation. That was a huge success.

Yet another challenge was the huge size of the backlog that needed to be entered into the new information systems. Old records were paper-based, which meant millions of records needed to be entered manually. This challenge had been met before in government, by setting up a data entry unit for such cases. This unit was utilised, in addition to the trained civil servants at relevant agencies. All backlogs were entered.

Unreliable electricity and Internet connections at some remote judicial offices through weak infrastructure in remote areas were unforeseen obstacles. Again, high-level government support came into action to develop infrastructure at those locations to overcome this challenge. Unsuitable work environment was a further hindrance to the implementation of the project, which was addressed by setting aside part of the budget for work place development.

The last obstacle faced was the large number of stakeholders involved in the project, for instance, process owners, development and implementation partners or overseeing bodies. Common vision had to be ensured, as well as building a sense of ownership within all relevant stakeholders. Extra effort was put into strengthening co-ordination, improving collaboration, as well as providing leadership at many levels. A special high-level committee was formed to ensure commitment and follow-up on all activities of the project.

Resources used for the project

As expected with such a huge project, the resources utilised were numerous. MSAD led the project with a senior project manager, reporting to the special high-level committee between MSAD and the MoJ (formed of Ministers, their deputies and members of relevant judicial bodies).

Respective contact persons and focal points were identified within all the participating judicial authorities. Those were all in direct contact with the

appointed project managers from MSAD. The main technology partner in the project was the multinational Microsoft/IBM, who brought in their local development partners through the strategic rebate agreement between them and the Government of Egypt.

MSAD brought in institutional development experts to review and re-engineer the internal processes and public services offered by judicial entities. MoJ offered the services of its JIC's 150-man team, who are all ICT personnel.

The first phase total cost was around EGP35 million (around (£3.5M). This covered the costs for all hardware (servers, PCs, etc.), software licences (which in turn cover development costs, as per the agreement with Microsoft/IBM), communication lines, training and human resources development, workplace development, in addition to project management costs. The first phase covered the development of all modules for the case management systems, as well as deployment to at least one of each type of court, or other relevant bodies.

The second phase entailed the deployment/roll-out of case management and other information systems in all remaining judicial institutions, and putting the same system in play at those institutions. Its cost is estimated at EGP100 million (around £10 million).

- **Sustainability and transferability of the project**

Project sustainability has always been an issue with previous e-government projects. This issue was taken into account within the planning phase of the project. Although the project had resulted in reduced public service costs for the beneficiaries, it had also led to better efficiency within the relevant agencies. That resulted in more revenues for the service providers. For the purpose of sustainability, an amount of that extra revenue was allocated for the constant upgrade and development of the information systems, as well as the development of the human resources overseeing them. ICT development programmes were put in place so that information systems teams would always be up to date with the latest technologies, and able to upkeep the applications

as well as provide support for systems' users. Those costs also covered communication line costs.

Specialised training units were set up within the JIC for training new systems users, as well as expanding the use of ICT within the judicial agencies. The JIC is also responsible for maintaining the central national judicial database, linking all judicial entities in Egypt together, which is hosted at the JIC's data centre. In addition, the JIC was charged with setting up and overseeing institutional measures (structures and processes) to maintain information systems within the judicial system.

Further measures taken to ensure the sustainability of the national judicial database and other judicial systems was the setup of a geographically remote disaster recovery site, synchronising daily with the main site.

Transferability of the project was a main objective from day one of the project's inception. The case management system is currently being rolled out at all 28 courts of first instance, 8 courts of appeal, as well as prosecution units and supporting bodies and other court types throughout the country. The public notary management system is also being rolled out throughout all of its offices. Roll-out was considered from the beginning of the planning phase. The project team members were signed on for the whole of the project roll-out period. It was the same case for the development and implementation partners.

- **Outcomes of Ministry of Justice project data analysis**

Figure 6.6 shows that IT as an enabler and facilitator of the project helps in attaining the objective of case management system development, providing electronic services to citizens and other administrative issues such as financial adjustments system, reservations and entries systems, along with all the departments in the courts that are to be automated. The IT enabler smooths the progress of automation in the project which includes simplification of procedures, and post-procedures engineering. The attainment of this objective (case management system development) is associated with ending the problem of an increasing backlog of cases each year, and results in savings benefits for

both the government and the public. Unlike the family card project case, when examining the network in Figure 6.6 related to the MoJ project, it can be noticed that most of the barriers were encountered during the implementation of the project. In addition, they are mostly culture-related; there is a lack of motivation to use the new services, a lack of awareness of the new services' existence or the resistance to use them as a result of the citizens' negative attitudes towards the new technology, or because of the corruption of some employees that make them discourage the widespread adoption of the project.

The general project manager of the project explains the occurrence of this resistance and justifies the reasons; he said:

> "Resistance existed, and it was a major concern at the beginning. Traditionally, people have a negative stance against anything electronic and would only use "traditional" paper-based service channels. There were many reasons behind this. For example, some employees manage to have illegal income from the traditional way of doing the service. They take advantage of the citizen's lack of knowledge of the work flow cycle and exploit the citizen's need to get his service done. The majority of procedures the employees used to follow have no origin in the executive guidelines. The introduction of electronic services may deprive these employees of their extra income. All employees, after the introduction of the new standardised work flow, have to stick to the exact procedures; and so does the citizen."

The efforts in this case are all directed towards changing the culture inside courts and other judicial organisations. This culture caused weak co-operation from employees as they used to believe that they would be replaced by computerised systems. Therefore, mandate decisions are to be taken to make the projects benefit in reality not only in theory. But these mandate decisions are postponed on purpose in some cases/problems. For example, knowing that people might not be aware of the introduction of the service, MoJ did not do anything to increase the awareness, like launching some campaigns or even exerting some pressure on corrupt lawyers and/or employees.

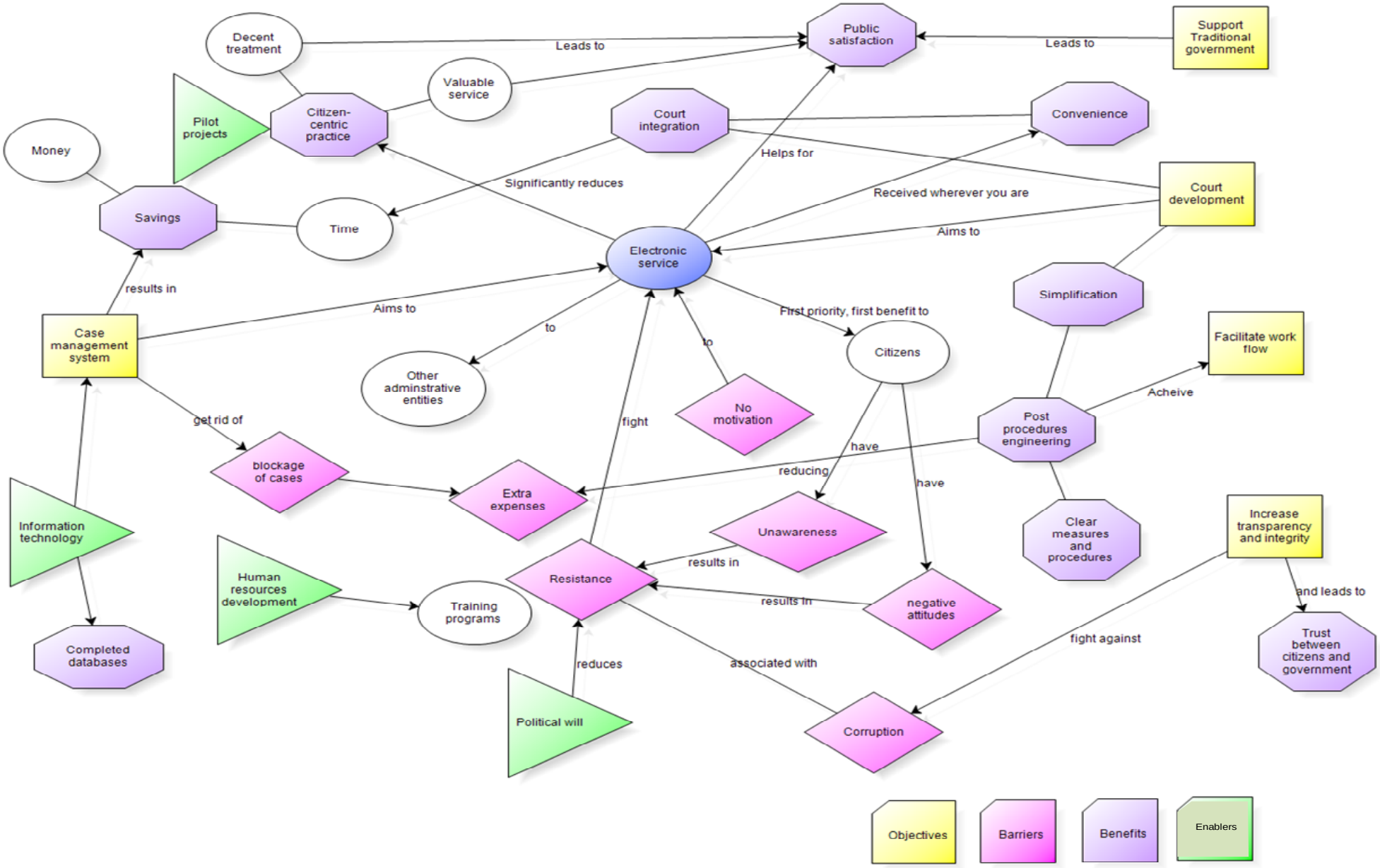


Figure 6.6: Ministry of Justice Case Project Network

This is one of the important points the general manager of the project stressed:

> "The ministry has a certain view regarding this issue. It is preferred to wait until the whole system is created that serves and operates better, then move to the next stage which is how to create the pressure and make the people aware of the system. If the confrontation with resisting parties started too early, there may be some real obstacles the government might not be able to overcome, and put the completion of the project at risk."

Finally, although the project has been implemented within the MoJ, the analysis revealed an absence of constitutional and legally fixed reference; there are more than laws and executive lists related to one service. Hence, it was hard to find one employee who knows well the business processes with their related rules. Also, there was ambiguity in the work cycle as there was no documentation for governmental processes and, hence, there was no clear work cycle for the judicial services. There has also been a totally different business process description from different persons.

It is obvious from the data that the main impact of the Judicial Procedures Project is better internal case management within the judicial system, and improved judicial public services. This was obvious in the feedback received from beneficiaries that used the new services at new service outlets, as well as users of the online services, and also from the surveys conducted to measure beneficiary satisfaction with the new services. The case management system, deployed in courts and supporting agencies, along with the institutional development and business process re-engineering has led to cost savings, and greater efficiency, as well as the expediting of case handling, leading to prompt, speedy justice. The judicial system hence did not accumulate any backlog starting from the judicial year 2008/2009 and even tackled some of the accumulated backlog from previous years.

Finally, it can be deduced from the data that ICT is the main tool utilised to reach the development goal, that ICTs have many challenges to delivery, but they are not impossible to overcome. And once actually implemented, ICT can

have a tremendous impact on public services. As it can be easily concluded from the components of the project, the latter is highly dependent on ICTs, be it archiving systems, human resources management systems, different databases' integration, or even specially tailored applications for each process and procedure. ICT is the tool for the development of judicial processes, as well as a facilitator of information flow between judicial organisations in Egypt and other government entities. And above all, the case management systems provide monitoring and evaluation of the whole system's performance, which is of upmost importance.

The project provides additional benefits that range from standardisation and lower maintenance by means of solution unification for more sectors/services (one system instead of multiple systems) to easier, greater and more accurate reporting capabilities utilising one database while reducing error and increasing efficiency, credibility and accessibility for beneficiaries to their own records. This project also provided a good example of cooperation between the public and private sectors for better serving the public and reducing government expenses so the money can be used in other sectors.

The project's impact is clearly evident. The Judicial Procedures Development Project is the result of the fruitful cooperation of numerous government organisations, as well as those from the private sector. This will promote cooperative and integrated work among them, or groups of them, in the future. In addition, utilising several different local development partners within the project contributes to the capacity building of the ICT industry as a development goal. Lessons learnt from the project include: the need to synchronise all stakeholders with the big picture and the project's vision; building a sense of ownership within relevant stakeholders is a top priority; a modular approach to the roll-out of such a huge project is best as opposed to going for a 'big bang' approach; responsibilities should be clearly defined and assigned; beneficiary convenience should always be the target when developing a service; centralisation of ICT applications can save many costs; decentralisation of service delivery is a must.

6.2.4 Case Study 4: CRM Project

- **Status before the project**

Prior to the project, citizens faced a lot of difficulties in sending their complaints (in paper form or sometimes over the phone) to government agencies. Examples of such difficulties include: not knowing how to complain, to whom to submit the complaint, and even what to expect and how to follow up. And in extreme cases, citizens may have had to travel to other cities where the organisation is located. Also, sometimes complaints were not delivered to the relevant authority.

The main problems and obstacles that were faced prior to the initiative can be summed up as follows:

- Complaint procedures were lengthy (some complaints took months to be resolved);
- Reliance on ineffective and inefficient procedures;
- Lack of monitoring and follow up of internal processes;
- Inefficient procedure to deliver a service;
- Need to process an ever growing number of complaints;
- Inability to track each individual complaint;
- No guarantee of feedback;
- No clear, well defined, interactive channel for communications;
- Unequal allocation of human resources.

These were all complications that had a direct impact influencing various social groups negatively. With the growing number of citizens and services, it was impossible to keep track of the citizens' complaints. The paper-based system became ineffective as a communication channel among the various government entities including ministries and the public sector, and citizens with different governmental entities.

- **The key benefits resulting from the project**

The main achievement of the initiative was a huge increase in the efficiency and effectiveness of the complaints' handling at all levels within government agencies where the system has been implemented.

In July 2006, the Citizen Relationship Management (CRM) project was launched by MSAD. It involved the integration of different interactive communication channels through a unified phone number and one email address, centralised call centre, automation of complaint-handling, and integration with other government systems with the aim of improving the services offered to citizens and businesses. Figure 6.7 shows the project's structure.

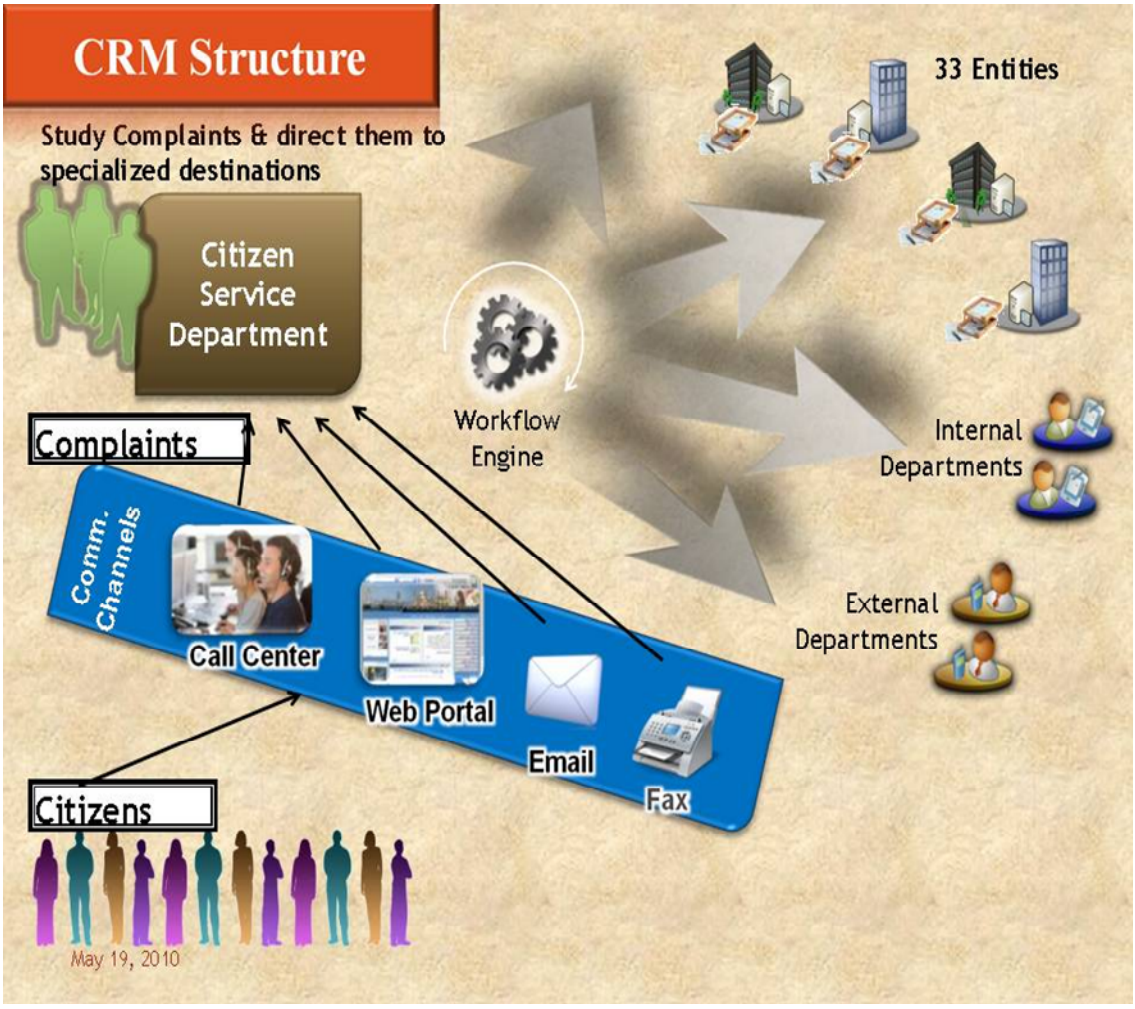


Figure 6.7: CRM Project Structure

Achievements of the project are:

- Providing a quick and easy procedure for citizens to send their complaints to the relevant authorities by phone, through a short number (19468), or by using the National e-Government Portal, or using the organisation's website and providing them with a case number in order to track their complaints. The system ensures a quick response is taken in order to resolve the citizen's complaint.

- It became much simpler to develop services to meet the citizens' needs through the statistics generated from the CRM system.

- Fast handling for urgent inquiries such as in the health and utilities sectors.

- All complaints are delivered to the authorised representative directly.

- All citizens can either call the number 19468 or access the bilingual e-Government Portal (www.egypt.gov.eg), in order to submit their requests that will go through the automated workflow provided by the CRM solution. The request would be immediately assigned a case number to track inquiries. Citizens can access the service 24/7 by quoting their case number to check their request status.

- Integrating different communication channels such as the CRM module within the Ministries' websites, the e-government portal and the central call centre. This was done to improve customer experience, increase efficiency of request handling, and eliminate duplication of efforts.

The introduction of ICT tools to complaint handling within the government has helped managers define and enforce specific rules, policies, and procedures, thereby, increasing the efficiency of day-to-day operations.

The CRM system's deployment in 40+ government bodies, allowed for building a performance management platform dubbed the "Public Service Dashboard". It is used by MSAD officials to monitor complaint patterns and other key

performance indicators (KPIs), to pinpoint areas within the government where improvements are needed the most. Finally, the feedback received from citizens revealed an increase in the satisfaction level since, for the first time, they are capable of tracking their complaints and receiving feedback.

- **The project stakeholders and implementers**

The initiative was introduced and implemented by MSAD who led the implementation effort in coordination with multinational technology providers and their local partners.

The initiative is currently being deployed at all agencies within the Government of Egypt, as part of an effort to raise citizen satisfaction and the level of service within the public sector.

The stakeholders of the project include MSAD, all government bodies in Egypt (along with their civil servants, which both resolve the raised issues as well as act as CRM agents), the technology provider, development partners and public service beneficiaries, citizens and businesses.

- **The project implementation**

The strategies used

MSAD launched a pilot project for the initiative at its inception. That pilot project encompassed availing CRM services for the National e-Government Portal and online services. Upon the success of the pilot project and the experience gained from its implementation, two government agencies were identified for solution deployment. These further systems were a great success, and it was then decided to implement the solution at a national-level. MSAD's ramp-up approach was critical in building the capacity of the implementation team, as well as demonstrating the benefits that can be realised by such a system.

The initiative aims at providing a convenient communication channel between citizens and businesses on the one side, and the government on the another.

The channel was meant to exchange complaints, suggestions and questions and for the government to provide its prompt feedback.

The MSAD also wanted to revolutionise the services offered to citizens and businesses in Egypt and promote transparency within the government, based on the initiative's main objectives being:

- Creating a call centre to receive citizens' calls 24 hours a day.
- Providing convenient channels for communication with government beneficiaries.
- Facilitating the process of sending and receiving citizen complaints.
- Developing a safe procedure where all complaints can be tracked.

The key development and implementation steps and the chronology

The original idea started in 2005/2006 with a limited implementation plan to serve as support to the government portal services. The online complaint forms available on the government portal were supported by a limited number of outsourced seats at a call centre, accessed via a unified short fixed phone number 19GOV (19468) shown in Figure 6.8.

Figure 6.8: Egyptian Government Hotline

The progress and accumulated experience continued to mid-2007 which allowed MSAD to establish a platform and a mechanism to develop and host similar services in different organisations. The importance of the CRM seconded by a call centre became more obvious in times of national crises, most notably that of Avian Flu. By the end of 2007, 11 different entities were either connected to MSAD CRM hub, or were running their own platform (MSAD supported other entities establishing their own system based on the same methodology).

With the increasing number of sites, MSAD used the services of a professional data centre to host and manage the technical infrastructure, thus offloading MSAD and the involved entities from all technical burdens.

In 2008, other entities, such as water and electricity companies as well as governorates (municipalities) engaged in similar initiatives with MSAD. At the end of 2010, 53 different entities were engaged with MSAD in this system.

The main obstacles encountered and how they were overcome

The main challenge was building capacities within government agencies to switch from the paper-based complaints system to a computer-based one. The project started by teaching civil servants computer skills, and then, step by step, training them on the CRM system till they became competent users of both computers and the CRM application.

The challenges faced are broken down under two main umbrellas:

1. Technical Implementation Challenges

One of the challenges was the integration of the different systems, linking documents throughout the business cycle with the CRM system and then consolidating the scattered data across all ministries and providing MSAD officials with a unified view over the performance.

Another challenge was that the CRM application was hosted in a data centre that was over 50Km away from where the call centre was based. This was overcome by choosing a CRM system that is based on a thin client web application which uses minimal network traffic.

From an infrastructure perspective, unreliable electricity and Internet connections at some remote locations and weak infrastructure in remote areas were unforeseen obstacles. Strong political support came in action to overcome this by upgrading the infrastructure at those locations.

2. Organisational Implementation Challenges

The main challenge was to train government employees in how to use the system, as they were operating on a paper-based model. To help overcome the challenge, an easy-to-use bilingual CRM system was chosen.

Changing the government's work culture, promoting transparency as well as transforming attitudes into becoming more customer-service oriented was a hard task that required the persuasion and cooperation of key influencers and a series of courses promoting the concept.

Resources used for the project

Since the project was initiated it was funded by MSAD. The exact values of the project implementation differ from one entity to another, depending on the number of citizens expected to interact with the system, as well as the number of seats at the call centre. Some services are seasonal, while others are provided throughout the year.

The budget is divided into:

- Hardware and software infrastructure
- Software licences
- CRM web interface customisation and development
- Call centre seats' rental fees
- Training
- Back office management/integration
- Project management

Resources associated with the initiative so far have accumulated up to 8,000 training hours for civil servants and over 1,600 software development man-days, in addition to infrastructure costs.

- **Sustainability and transferability of the project**

The initiative's sustainability is ensured by the high levels of satisfaction it has garnered among public service beneficiaries, citizens and businesses. The initiative is sustained at each government agency where the system is deployed by building capacities there to ensure the smooth operation of the CRM system. Also, MSAD periodically monitors the performance at agencies to ensure that the latter abide by a set of service levels.

The project is foreseen to be consolidated into a National Citizen Interaction Centre within the fiscal year 2010/2011, to serve all government/public administration bodies that request the service, and probably be operated as an autonomous call centre.

Outcomes of CRM project case data analysis

The final case study in this research is **the CRM project**. Figure 6.9 shows that the final goal is to serve people. Accordingly, the governmental organisations have to communicate and exchange documents and data to save the trips that citizens have to make between offices. This is where the importance of the project is highlighted, where citizens now have the communication channel which they can use through which to submit their complaints without the need to go to the related offices.

The project shed light on all the issues and common problems that may face efforts to establish e-government. It provides options for effective management and satisfaction by both citizens and businesses for the services provided to them.

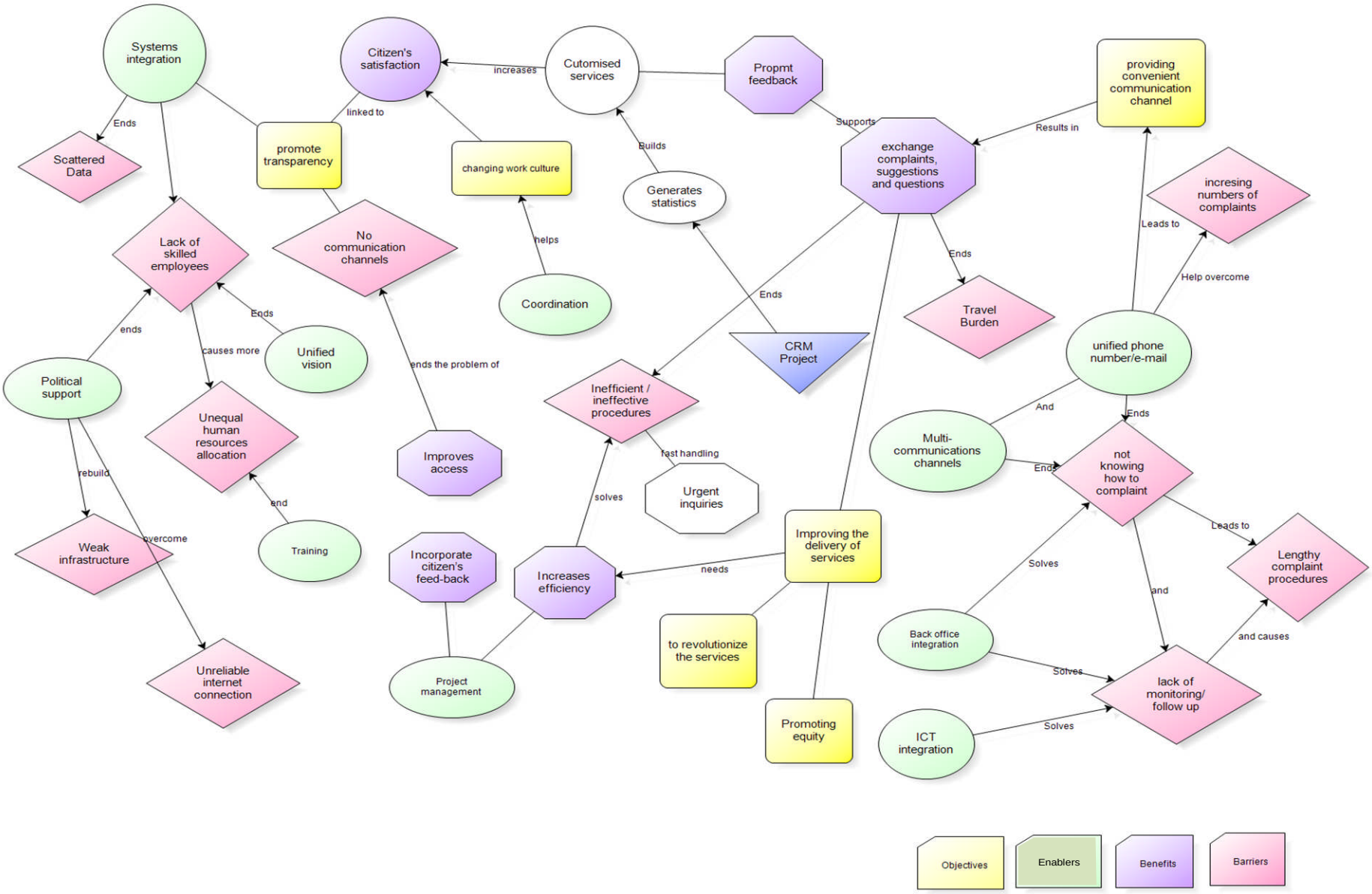


Figure 6.9: CRM Case Project Network

The main enabler to the success of the project has been identified as “change of organisational culture and thinking” which the general manager of the CRM project has confirmed:

> “The success of e-government requires a change in the government work and performance, how they interact with information and how officials see their jobs and interact with the public citizens. It also requires achieving active participation between government, citizens, the private sector, and the civil sector. The CRM project needs to introduce an ongoing feedback from and to the citizens and officials who deal with e-government services and use.”

In addition, it is noticed there is an influence by the project on citizens’ encouragement for public participation. Through the same concept of submitting their complaints through the various communication channels, the public, including the private sector, civil society and individuals, can participate effectively in the affairs of the e-government. Hence, the project is noticed to be contributing to the success of the e-government initiative as a whole, as public participation is an important element in many of its phases from the interpretation of the vision and determining the priorities of the community, to report e-readiness and management of projects. The public can comment on the plans of the e-government, retrieve information, for example, through surveys assembly, focus groups, or e-mail and participate in the dialogue between citizens and planners and implementers of the e-government.

A result of the CRM implementation was its ability to increase citizen satisfaction levels through reducing the average turnaround time for incoming calls. Moreover, the solution has increased operational efficiency, improved service quality and accuracy through history tracking and monitoring tools and opened new channels of communication with citizens through the automated call centre and bilingual website.

There are a number of lessons learnt that conclude the discussion of the findings of the CRM project. First, it is obvious that rolling out the CRM solution to other ministries requires a gradual approach of sharing. Second, doing a

proper analysis of the complicated infrastructure and work culture prior to implementation and launch of the CRM solution proved to be very important in predicting problems and planning to work around them ahead of time. Also, a phased approach is best for a project of such a scale. Short-term targets help in securing political support for the project, and hence financing.

6.3 Chapter Summary

This chapter presented a description of the cases which represent the e-service projects within the Egyptian government and implemented by different ministries in Egypt. The objective of this description is to understand the main underlying factors which affect the development and implementation of e-services in the Egyptian government.

Four case studies have been conducted in this research. These are: the university enrolment project owned by the Ministry of Higher Education; the family card system project owned by the Ministry of Social Solidarity: The Ministry of Justice project: and, the Citizen Relationship Management project (CRM) owned by the Ministry of State for Administrative Development. The description of each case included an explanation of the status before the actual implementation of the project, the key benefits that resulted, the project stakeholders, the implementation strategies and steps, the main obstacles encountered, the resources used, and finally the project's sustainability and transferability.

Each project description concluded with an analysis conducted on the data obtained from the cases and the outcomes have been incorporated in networks and helped the development of the findings. These findings are the result of the within cases analysis. In the next chapter, the researcher will present the findings generated from the cross cases analysis.

7 CHAPTER SEVEN: FINDINGS ACROSS THE E-SERVICE PROJECTS CASES

7.1 Introduction

This chapter discusses the findings of the cross cases analysis regarding barriers and enablers to e-government development in Egypt. After developing causal networks explaining processes in each particular case and understanding each case in its own terms in the previous chapter (Chapter 6), it is necessary to understand what comparative analysis can bring.

Therefore, the major purpose of this chapter is to:

Discuss the findings across many cases to understand how they are qualified by local conditions, and thus to develop the final framework with more descriptions and explanations.

This chapter is divided into three sections. Section 7.2 discusses the major findings and outcomes resulting from the matrices and networks developed after the interpretation of all interviews and analysing the documentary data. Also, the relationships among major factors and/or categories are also discussed. According to these findings, section 7.3 presents and explains the final framework and how it was modified after the cross cases analysis. The final two sections (sections 7.4 and 7.5) initially give a summary of the major factors identified as either barriers or driving forces to e-services development in the Egyptian government. The research findings for each category of the barriers and enablers are individually discussed based upon the proposed framework. Finally, based on the analysis of the key official employees' interviews, the process through which e-service projects are implemented in the Egyptian government is proposed. The chapter summary concludes this chapter. The main components of Chapter 7 are illustrated in Figure 7.1.

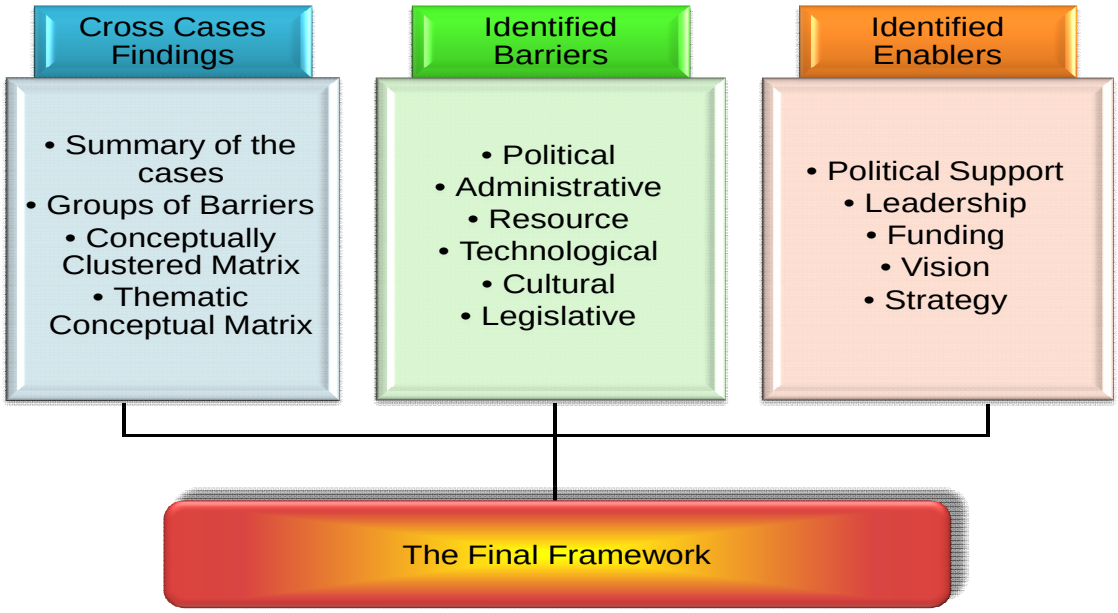


Figure 7.1: Outline of Chapter 7

7.2 Cross Cases Findings

After doing a separate analysis and case report for each case, cross cases findings are drawn so the meanings can be generated more easily. The organised process that was undertaken in designing the research, reviewing the literature, collecting and analysing the data, have all revealed some key lessons and learning through the identification of the key factors that hindered the development and implementation of these projects, and those that contributed to their success.

7.2.1 Summary of the cases

A summary of the findings against each theme in the four case projects is included in Table 7.1. From this summary the following findings can be drawn:

- The major aim of all the four Egyptian projects is providing services for citizens, by different and convenient ways that suit them. These ways include Internet, mobile phones, call centres, and finally the traditional way through departments and agencies. This is the main difference between these four projects and other projects implemented within the

same e-government program in Egypt. These projects (e.g. the companies' e-establishment services, the Government Procurement services, and the Egyptian Investment services) aim to provide services to other categories, including businesses, investors and other governmental organisations, as well in convenient ways that suit each of these categories.

- The most persistent barrier in three of the four cases (not evident in the CRM case) is people's resistance to change, especially employees who do not want to change their work habits. They also do not want to learn new business processes and technologies. One more reason is when the employees feel the technology advances in the work cycle, they begin to feel they are useless and start to fear losing their job so they try to resist. So it was more than difficult to change people's culture, especially with the poor execution of change management from the projects' leaders. Although there were plans to tackle this barrier, the lack of experienced staff for developing extensive and engaging IT training courses for these employees affected this change to great extent.

- Regarding the citizens' resistance to change, in most situations, they do not mind trying new things as long as they will obtain a good quality service. This is obvious in the CRM case where even the employees' resistance to change did not appear (as mentioned in the previous point). This could be the result of many reasons. One reason is that the mobile phone penetration in Egypt is very high (nearly 50 out of 80 million) and is in all social and economical levels (CAPMAS, 2010). There are some services provided through mobiles that need simple technical knowledge which means that people are ready to use new things to obtain some services. It also indicates that the use of technology will not be a barrier for users if the instructions are simple enough, given that they have the minimum level of education and knowledge. This encourages the government to provide services on convenient channels such as mobile phones and not only the Internet.

Table 7.1: Summary of the findings of the four case studies

The University Enrolment	The Family Card System	Ministry of Justice Project	CRM Project
Status before the project	**Status before the project**	**Status before the project**	**Status before the project**
• Unequal demand for faculties in universities • Increasing number of students to join universities each year • Data entry errors • No access to personal information • Expenses burdens on government • Limited time frame	• Lack of follow up • High leakage ratios • Inaccurate delivery of the commodities • Illegal transactions • Time consuming • Inconsistency of registries • Corruption • Data entry mistakes	• Lengthy judicial procedures • Ambiguity of procedures • Ineffective/ inefficient procedures • Lack of monitoring and control • Low level of service offering • Ever growing number of cases • Large size of backlog • No follow up on execution of rulings • Unequal allocation of human and physical resources.	• Lengthy complaint procedures • Lack of monitoring and follow up • Inefficient procedure to deliver a service • Ever growing number of complaints • Inability to track each individual complaint • No guarantee of feedback • No clear, well defined, interactive channel for communications • Unequal allocation of human resources.
Stakeholders and Implementers	**Stakeholders and Implementers**	**Stakeholders and Implementers**	**Stakeholders and Implementers**
• Ministry of State for Administrative Development • University Enrolment Co-ordination Office • Ministry of Education • Private operators • Developers, testers, call centre, hundreds of thousands of students/users	• Ministry of Social Solidarity • The Ministry of State for Administrative Development • Egyptian society.	• Ministry of Justice • Supporting judicial bodies • Ministry of State for Administrative Development	• Ministry of State for Administrative Development • All government bodies in Egypt along with their civil servants • CRM agents • Technology provider • Development partners • Public service beneficiaries • Citizens and businesses
Strategies	**Strategies**	**Strategies**	**Strategies**
• Not to go for a big-bang approach, and sticking to a ramp-up strategy • Paper system in parallel with online system • Contingency: a disaster recovery site • High level of performance	• Start with a pilot project • Outsourcing • Centralising the design • Decentralising the implementation	• Setting a clear vision • Business process re-engineering • Securing top management's support • Timely implementation • Capacity building of civil servants • Outsourcing • Compilation and documentation	• Launching pilot project • Ramp-up approach in building the capacity of the implementation team

The University Enrolment	The Family Card System	Ministry of Justice Project	CRM Project
Implementation steps • Investigation of the work flow • Approval of web-based application • Enforcement of the sole use of application • Initiation of public computer labs • Operating call centres • Training sessions to CRM agents • Launching updated version of the application	**Implementation steps** • Establishing electronic databases • Defining the system's technical architecture • Preparing design of the system • Developing the applications • Building the network infrastructure • Building the service centres • Building the service centres • Training the system users • Hardware and Software installation • System testing	**Implementation steps** • An offer to introduce ICT to processes and services • Form high-level committee to oversee the implementation of the project • Defining project scope • Inviting partners • Defining project tracks • Training civil partners • Developing relevant components	**Implementation steps** • Limited implementation plan • Establish a platform and a mechanism to different organisations • Manage the technical infrastructure
Barriers • Resistance to change • Lost/undelivered PINs • Infrastructure limitations • Constant changing of rules • Operational costs	**Barriers** • The manual culture • Technical challenges • Citizens' resistance • Security challenges • Intentional or unintentional damage	**Barriers** • Digital divide • Computer illiteracy • Resistance to change • Lack of qualified and skilled human resources/positions • Interoperability and multiple service delivery channels • Huge size of backlog • Unreliable electricity and Internet connections • Large number of stakeholders involved	**Barriers** • The integration of different systems • Linking documents with the CRM system • Consolidating the scattered data • Providing MSAD officials with a unified view over the performance • Changing the government's work culture • Promoting transparency • Transforming attitudes into becoming more customer-service oriented • Training government employees
Resources • Part of the national budget • Sponsors from private sectors	**Resources** • Database Technical Unit • Distributed Team • Family Project Task Force • Project Management Group	**Resources** • Human (managers, contact persons, Technology partners, development experts) • Financial (£ 3 M for first phase and £ 9 M from the public budget)	**Resources** • 8,000 training hours for civil servants • Over 1,600 software development man-days • Infrastructure costs

The University Enrolment	The Family Card System	Ministry of Justice Project	CRM Project
Key benefits	**Key benefits**	**Key benefits**	**Key benefits**
• Replacement of paper-based process • 24/7 call centre for student support • Access to personal information • Huge public and government savings • Guidelines, rules and interactive online help • Error-free forms • Altering choices available after submission • Paving the road for further inter-government projects • Enhancing government performance • Consolidation, integration and aggregation of data	• Computerised application • Up-to-date database • Efficient system • Monitoring, control over the infiltration and loss in supports • Creation of a civilised environment • Establishment of clear and neutral processes • Providing accurate, up-to-date, and timely data, information, and statistics • Having the chance to participate • Initiating call centre with low cost call fees	• Reducing administrative burden • Raising the efficiency and effectiveness of judicial systems • Complete transparency • Re-engineering judicial public services' processes • Developing a case management system • Introduction of new service delivery channels	• Providing a quick and easy complaint procedure • Generating useful statistics • Direct delivery of complaints to authorised representatives • Integrating different communication channels
Sustainability and transferability	**Sustainability and transferability**	**Sustainability and transferability**	**Sustainability and transferability**
• Public-private partnership model • Constant upgrading of e-government portal • Experience in the business model formulation and implementation	• Low running cost of the system • Outsourcing • Return on investment (ROI) • Technology • Awareness and media campaign	• Reinvestments of savings • Updated information systems • Specialised training • Maintaining databases • Remote disaster recovery	• High levels of satisfaction • Smooth operation of the system

- There is no reluctance from policy makers for increased citizens' participation resulting from the introduction of e-services. They do not intentionally prevent the introduction of e-services, but sometimes they simply cannot. Sometimes laws do not permit the transformation of the traditional service to an electronic one unless the legislation or the law changes. An example of this is in the university enrolment project where the legislation relating to the Sports Incentive bonus marks necessitated that the student should request his bonus marks after the declaration of the secondary schools results. Another example is the grievances rule where each student has the right to complain about his grades. Another example from the Ministry of Justice project is that there are legislative problems related to the legal framework that addresses submission of electronic documents, liability emerging from electronic documents, proofing value of electronic documents against paper documents, and introducing the electronic signature as a part of the judicial process. The projects managers were not able to go further with the initiatives until the legislations were changed which may take quite a long time.
- Time is actually an important enabler for all the projects. For example, after five years from now, all the government's new employees will be from young people who are fully aware of the technology capabilities. This would enhance culture change and be a strong enabler for transformation. Enforcing the change is also an enabler, as long as the government foresees a benefit in dominating the electronic use of the service by taking into consideration all the technological and administrative precautions before enforcing the service.
- There is a main difference between the University Enrolment and the Family Card System projects on the one side and the Ministry of Justice and the CRM projects on the other. The first two projects are enforced by the Egyptian government. That means it is compulsory for the citizens targeted to use the electronic solution as there is no other way of providing the service. This difference affected the numbers of the population who actually made use of the available service. Although the

number of citizens attached to the Ministry of Justice and the CRM projects services is huge, the number of citizens who actually use these services is very low (less that 1% of the target population). The problem is that the government does not advertise the service, and awareness is therefore a problem. This could be a result of the reluctance of the government to advertise because it does not require high demand on the online services of these projects or sometimes the government is not very good at advertising. It could be good implementer of ideas, but marketing is another issue. Another problem is that many citizens feel the need to use this service only once or twice in a lifetime. For example, any Egyptian family could use the university enrolment services once or twice, likewise the services of the Ministry of Justice. So there is no continuity in using the service from the service side. The same problem has happened to services other than those discussed in these cases such as the issuing of birth certificates online and the issuing of a National ID number. Obviously, all the Egyptian population is engaged in these kinds of services; however, the demand for these certificates online is still very low. The limitation could be the high issuance fees or, or there was no confidence in the robustness and reliability of the service. As a conclusion for this point, enforcing the use of the e-services has a great impact on increasing the number of users and justifies the continuity of the project itself.

7.2.2 Groups of barriers

For the same goal of drawing on cross cases findings and generating the meanings more easily, a network has been created (Figure 7.2) from across the four cases analysis, illustrating the categories and subcategories of barriers in a hierarchical structure through the use of parent/child relationships using the NVivo software models. The barriers to all projects' implementation are categorised according to the interviewees' perception that:

- Barriers existed before the start of the projects' implementation and could have put the whole initiative at risk,

- Barriers occurred after the start and during the actual implementation of both projects,
- Possible future barriers might be encountered in a later stage of project implementation and/or sustainability.

One important point that was revealed during the process of identifying these groups of barriers is that the first attempt to reveal the barriers in the studied projects was by interviewing a group of employees working in the implementation level of these projects. Unexpectedly, this group tended to answer questions about the barriers and problems in their project with “negative” answers. Although all questions asked began with “in your opinion” or “in your own words”, some respondents did not want to show the problems encountered in their projects. Although formal permission to conduct interviews had been obtained before meeting those employees, and they were aware of this permission, the reason could possibly be the lack of transparency or their wish not to reveal something that might bother their seniors. As a result, it was decided to conduct more interviews with the executive level within each project in addition to program and sector directors.

After analysing these groups of barriers, many key findings should be noted:

- There is an enormous amount of stress indicated by interviewees on the lack of coordination among many governmental ministries and organisations. This indicates that the Egyptian government is not corporate and means that the plan is neither unified nor shared. “The corporate government” is theoretically applied in Egypt but it is not activated. Each ministry has its own plans which might contradict those of other ministries, or, the introduction of e-services is not a top priority for these ministries. For example, MSAD corresponds with the Ministry of Finance for activating the e-payment service. This has to be a mandate for the Minister of Finance to finish which, unfortunately, does not happen.

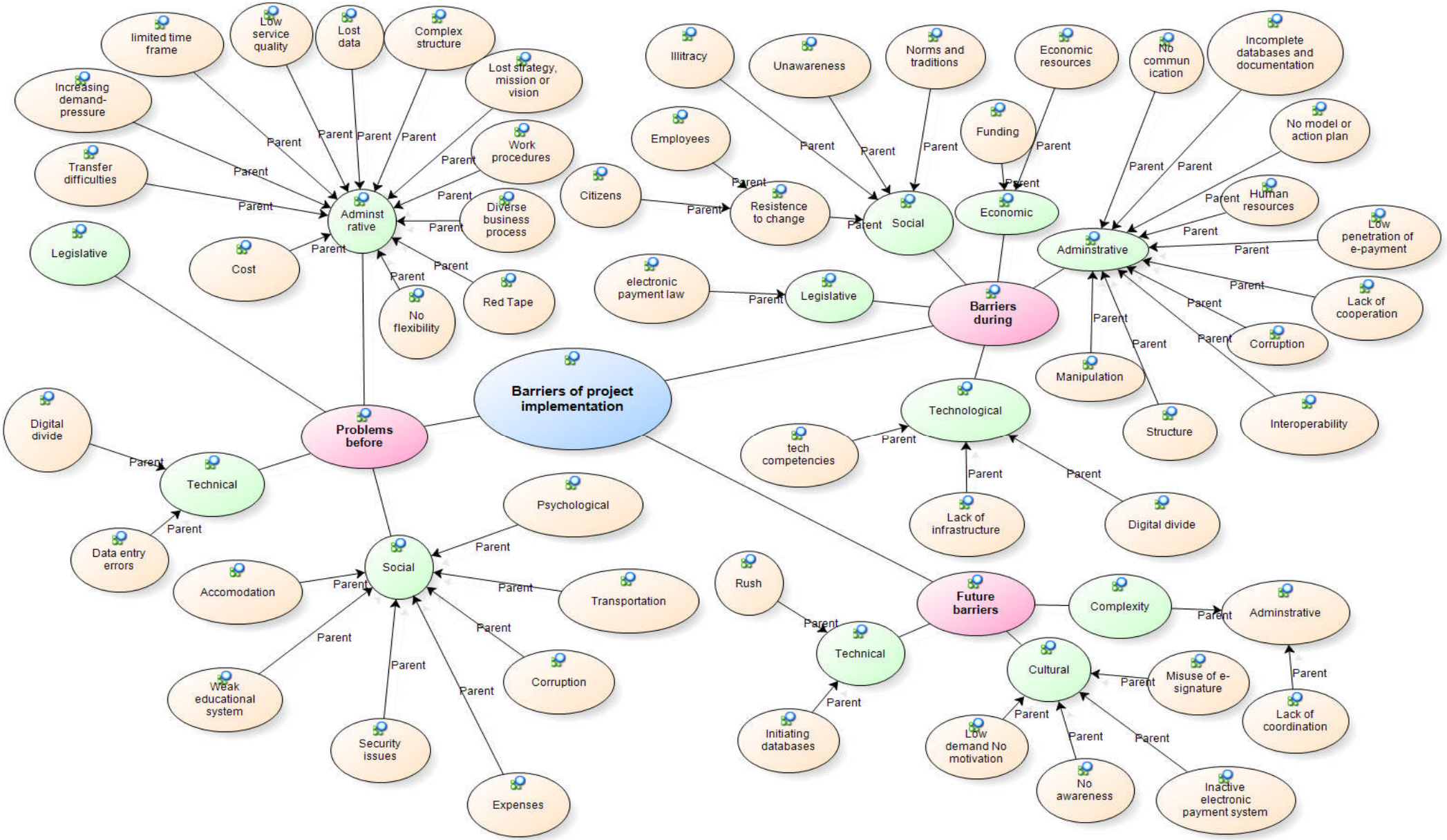


Figure 7.2: Groups of Barriers for E-service Projects in the Egyptian government

- Electronic services are not a priority for citizens (the key beneficiaries of the projects). Red tape is not their main or consistent problem that they are looking forward to solving in the immediate future. Although the projects initiatives provide many opportunities for their own convenience and satisfaction, still there is very low demand for what is supplied by these projects. This problem may question the importance of these kinds of initiatives. Projects managers may find it difficult to justify the costs of their project which can lead to cutting their funds and directing them towards other projects that really reflect the people's need, i.e. not necessarily e-services projects.

- Officials did not deny their failure in increasing people's awareness of their projects. They admitted insufficient efforts either from the relevant ministries or from government in general. In addition, the awareness barrier existed from inside the government as government employees lack awareness regarding the potential of e-services and the added value that they offer to society. However, interviewees have noted that the importance of this factor has lessened during the past few years, since the government has motivated its employees to attend awareness events and extend their knowledge on e-services and the new generation of public servants are, in general, more familiar with e-service concepts.

- Finally, there is a huge strain on the administrative system regulations barriers as they are not performed properly at an operational level. The senior officials are dragged into the operational processes and there are no policies to authorise other officials to do the rest. Some interviewees believe that the problem began with the lack of clear policies and strategies in the administrative system. However, the majority of the interviewees have emphasised that the more serious problem is in the execution of these regulations and rules in most cases.

7.2.3 Conceptually Clustered Matrix

In addition to the previous groups of barriers network, a Conceptually Clustered Matrix (shown in Table 7.2) has been adopted to bring together and display all the relevant responses of all key interviewees and allows a comparison between responses and between interviewees. It also aims to group the research questions so that the meaning can be generated more easily. The matrix set up comparisons between different kinds of interviewees, so it is both role-ordered and conceptually-ordered.

The research brings up two specific questions about the motives and objectives of the implementation of e-service projects in Egypt, and a more general question about the interviewees' perception of the factors that they think are behind the success of these projects. During data collection, it seemed there was a relationship between the motives and objectives questions and that of the success factors. The best way to find whether a relationship exists between the interviewees' perception of the motives behind the project and their objectives on the one hand and their perception of the projects success factors on the other would be to cluster the responses to these questions.

The matrix format is a simple interviewee-by-variable matrix. It displays all the relevant responses of all key interviewees to three of the research questions on one sheet and allows a comparison between responses and between interviewees. The matrix set up comparisons between different kinds of interviewees (Program Directors, Project Managers, Advisors, etc.), so it is role-ordered, as well as conceptually-ordered. Reading across the rows gives a profile of each interviewee and provides an initial test of the relationship between responses to the different questions.

Table 7.2: Conceptually Clustered Matrix

Interviewees		Enablers	Objectives	Motives	Extent of implementation
Program Directors (PD)	PD1	Leadership	Access to technology	Investments	Partly integrated
			Improve services	Savings	
				Efficiency	
		Citizen centric	Increase efficiency	Economic	
				Government communication	
		Political will	Support government functions	Coverage	
				Flexibility	
	PD2	Citizen centric	Efficient exchange of data	Security	Integrated
				Improvement	
		Coordination	Integrate government communication	Work facilitation	
				Efficiency	
		Political will	Establish integrated national database	Transparency	
		Community participation		Interaction	
	PD3	Leadership	Improve services	Investments	Transactional
			Access to technology		
		Coordination	Attract foreign investments	Government communications	
		Partnership	Create trained staff		
			Reduce costs		
		Political will	Development	Security	
		Pressure and demand	Facilitate work flow		

Interviewees		Enablers	Objectives	Motives	Extent of implementation
Project Managers (PM)	PM1	Interaction Political will Pressure and demand Leadership Reliability Community participation Security Access Coordination	Increase transparency Efficient exchange of data Public satisfaction Facilitate work flow Improve services Reduce costs	Coverage Help and guidance Better service Flexibility Access	Transactional
	PM2	Political will Coordination Pressure and demand	Attract foreign investments Facilitate work flow Increase transparency Increase trust Public satisfaction Serve people	Clarity Transparency Access Trust Savings Work facilitation Effeciency	Partly transactional
	PM3	Leadership Political will Community participation Coordination Pressure and demand	Access to technology Increase efficiency Improve services	Access	Transactional
	PM4	Political will Pressure and demand	Increase efficiency Integrate into the global system Development Reduce costs Serve people Facilitate work flow	Flexibility Savings	Partly transactional
	PM5	Coordination Leadership Political will Technology Community participation	Serve people	Easiness Economic Better service Savings	Transactional
	PM6	Political will	Serve people Facilitate work flow Increase efficiency Reform Improve services	Help and guidance	Cataloguing
	PM7	Vision Political will	Public satisfaction	Transparency Savings	Integrated

Interviewees		Enablers	Objectives	Motives	Extent of implementation
Deputy Program Directors (DPD)	DPD1	Leadership Citizen centric Constant evaluation Coordination Political will	Enhance work environment Facilitate work flow Improve services Partnership Serve people	Savings	Partly integrated
Advisors (A)	A1	Citizen centric Functionality Leadership Political will Partnership Technology	Access to technology Attract foreign investments Enhance work environment Reduce costs Increase citizen interaction Increase efficiency Speed of achievement Integrate into the global system	Clarity Efficiency Transparency Interaction Government communication	Transactional
	A2	Leadership Citizen centric Coordination Vision Political will Partnership	Development Increase efficiency Reform Support government functions	Improvement Efficiency Interaction Savings Security	Transactional
	A3	Leadership Political will	Facilitate work flow Serve people	Improvement	Mostly integrated
	A4	Leadership Coordination Vision Political will Pressure and demand Resources Technology	Facilitate work flow Increase citizen interaction Increase transparency Set vision and mission Increase trust Managing resources Support government functions Reform	Flexibility Economic Efficiency Transparency Interaction Investment Saving	Transactional
Minister Deputy (MD)	MD1	Political will Coordination Partnership Vision Leadership Technology	Attract foreign investments Reform Increase citizen interaction Serve people Increase efficiency Integrate into the global system Managing resources Public satisfaction	Access Improvement Efficiency Transparency Interaction Trust	Integrated

Interviewees		Enablers	Objectives	Motives	Extent of implementation
Coordinators (C)	C1	Political will Coordination Partnership Vision Leadership	Attract foreign investments Enhance work environment Improve services Increase trust Increase citizen interaction Increase efficiency	Coverage Easiness	Transactional
	C2	Citizen centric Political will Coordination Pressure and demand Leadership Partnership Resources Technology	Serve people Support government functions Integrate into the global system Public satisfaction Reduce costs Reform Speed of achievement	Better service Economic Efficiency Transparency Flexibility Help and guidance Interaction Savings	Transactional
	C3	Leadership Coordination Functionality Partnership Political will Resources Technology Vision	Facilitate work flow Improve services Increase transparency Serve people Support government functions Increase efficiency	Better service Easiness Economic Efficiency Transparency Interaction Savings Work facilitation	Transactional
	C4	Political will Coordination Leadership Reliability Resources Partnership Technology	Facilitate work flow Managing resources Public satisfaction Reduce costs Serve people Support government functions	Coverage Access Easiness Efficiency Flexibility Help and guidance Interaction	Transactional
Sector Directors (SD)	SD1	Coordination Political will Partnership Leadership	Facilitate work flow Increase citizen interaction Managing resources Partnership Reform Serve people Support government functions	Better service	Partly integrated

A scan down the columns in Table 7.2 provides both information and leads for follow-up analyses. In the Success Factors column, “Political Will” is prominent. Also, the factors of full cooperation among all ministries and government bodies and with the other private sector companies and leadership have a noticeable amount of emphasis. Making comparisons among other parts of the matrix leads to more conclusions. For example, there is significant weight on citizens among projects managers as the common objectives for them are: being capable to serve citizens, and increasing citizens’ satisfaction. But practically none of these objectives is for either the program directors or for advisors (whose focus is on in-government related objectives e.g. to support government functions and in-government operations and increase the efficiency and speed of achievement). Moving to the motives responses, most of the projects managers concentrate on citizen-centric related motives. This can be associated with their projects being directed mainly to people as they provide direct services and interact directly with citizens.

Looking across rows, relations are noted between variables. In addition to the dominance of political will and leadership as the main success factors, some of the recognised factors are noticed to be associated with certain motives and objectives behind the e-service implementation in the Egyptian government. It is observed that: interviewees, who think that the objectives and motives are mostly dedicated to citizens, emphasise the citizen-centric, demand, coordination, commitment and community participation as the most important success factors. On the other hand, the opposite pattern does not exist (those who believe the objectives and motives are related to the improvement of the in-government operations, business processes, work facilitation, efficiency, etc., do not concentrate only on security, funding, strategy and other inter-governmental factors). It can be concluded from this comparison that the interviewees usually perceive the success of the whole initiative as the result of the beneficiaries’ participation and commitment (whose interest is thought to be the major goal of the initiative).

7.2.4 Thematic Conceptual Matrix

Another two questions the research is aiming to answer are:

1. What barriers and problems are encountered during planning/initiation and implementation of successful e-services in the Egyptian government? These impediments may be inherent in the nature of the governmental organisations or may be conditioned by external factors and context.
2. What management and coping strategies were employed to deal with those barriers and problems?

Therefore, during interviews, interviewees were asked about typical problems they encountered as well as the problems they are expecting to have in the future. In addition, they explained what was done about these problems and the future solutions to solve the predicted, up-and-coming problems. Their notes have been coded and entered into a Thematic Conceptual Matrix (shown in Table 7.3) where more general conceptual themes are the ordering principle rather than persons or roles (as has been done in the Conceptually Clustered Matrix). For example, the problems are clustered into groups to define which are technical, which are cultural, and which are organisational in nature.

Similar clustering has been carried out with the results of the coping strategies. For example, in the family card project case, two types of training were applied, theoretical and on-the-job training. The objective of the training was to make the employees comfortable with the automated system. The same happened in the MoJ projects where extensive and IT training courses took place to train civil servants who thought they would be replaced by younger, computer-literate employees. This led to overcoming many problems at one time: it removed the fear from dealing with technology as a threat to employees, increased the human resources skills needed for the sustainability of the projects, and also helped reduce corruption within government agencies resulting from lack of monitoring and accountability methods associated with traditional, paper-based environments.

Table 7.3: Summary of Barriers and Suggested Strategies

<table>
<tr><th rowspan="2">Coping Strategies</th><th colspan="5">Problems</th></tr>
<tr><th>Economic</th><th>Cultural</th><th>Legislative</th><th>Technological</th><th>Administrative</th></tr>
<tr><td rowspan="2">Sovereignty and mandate</td><td rowspan="2"></td><td>Resistance to change</td><td rowspan="2">Ineffective law implementation</td><td>Incomplete infrastructure</td><td>No communication</td></tr>
<tr><td>Norms and tradition</td><td>Incomplete databases</td><td>Lack of cooperation</td></tr>
<tr><td rowspan="2">Decision enforcement</td><td rowspan="2">Budgetary problems</td><td>No demand/no motivation</td><td>Complexity of required laws</td><td rowspan="2">High technology set-up cost</td><td>Conflicting priorities</td></tr>
<tr><td>Negative attitude</td><td>Insufficient laws</td><td>Process workflow re-engineering</td></tr>
<tr><td rowspan="4">Awareness campaigns</td><td rowspan="4">Poverty</td><td>Unawareness</td><td rowspan="2">Security issues</td><td rowspan="2">Automation</td><td>Corruption</td></tr>
<tr><td>No demand/no motivation</td><td>Lack of trust</td></tr>
<tr><td>Inactive citizens' participation</td><td rowspan="2">Online transactions issues</td><td rowspan="2">Low penetration</td><td>Lack of transparency</td></tr>
<tr><td>E-service is not priority</td><td>Lack of innovation incentives</td></tr>
</table>

Coping Strategies	Problems				
	Economic	Cultural	Legislative	Technological	Administrative
Reform	Financial crisis	Illiteracy	Politics of information	Incomplete infrastructure	Old structure and processes
				Incomplete databases	Complexity
		Corruption		Digital divide	Red tape
		Failure to meet expectations		Networking	Poor organisational infrastructure
				Lack of standards	Corruption
Partnership	Lack of financial resources	Lack of competitive pressures forcing change		Security and privacy	Lack of vision and strategy
		Computer illiteracy		Lack of expert assistance	No model or action plan
		Passive participation		Insufficient authentication methods	Sophisticated procedures
				High technology competence	
Laws amendments/initiation			Absence of legal framework	Authentication	
			Unsuitable legislations	E-payment	
Training	Lack of skills amongst staff	No demand/no motivation		Technical competencies	Low quality of services
		E-literacy			

Many of the strategies included in Table 7.3 have already been adopted in case projects (as previously explained) for the problems that have already appeared. The rest of strategies are suggested for solving the future challenges that are expected to be encountered in a later phase of both projects' implementation.

7.3 The Revised Framework

Before the actual collection of data, an initial conceptual framework had been developed for explaining the main barriers and enablers for e-service projects development. The framework has been built based on many stages.

The first stage is reviewing the prior literature in the area of e-service development in government organisations. The relevant previous frameworks facilitated a better understanding of the nature of the e-service development process, particularly to identify barriers and success factors and, hence, the development of the framework.

The second stage is reviewing the efforts being undertaken in developing countries, which are at a basic level of their progress besides considering e-government lessons already learned in the developing countries' world.

The final stage for developing the conceptual framework is the two pilot surveys conducted before the main stage of primary data collection. As mentioned in chapter 5, the purpose of conducting those surveys is to gather initial insights about what the factors that influence the e-service introduction, development and implementation could be. The surveys also aim to confirm the findings which the researcher has obtained from the literature review.

After conducting the interviews, the framework has been modified according to the new data collected and their analysis. Some of the barrier groups remain persistent throughout the process of developing, introducing and implementing the electronic service, while others disappeared in the Egyptian e-government context.

Other groups of barriers came out as either future challenges that might happen, or past problems that have been taken care of. The same applies to the enablers that facilitated the development of the e-services. The modified framework is shown in Figure 7.3.

The current status (AS-IS) and the desired end state (TO-BE) of the framework has been explained previously in chapter 3, where the initial framework was introduced. The groups of barriers and enablers of e-service development and implementation in the Egyptian government identified after the data collection and analysis are discussed in the following sections.

7.3.1 Identified Barriers

7.3.1.1 Political Barriers

Based on the evidence from the interviews, this group of barriers does not seem evident either in the introduction, development or implementation of any of the e-service projects in the Egyptian government. They are not even the kind of barriers that could affect – if they exist – a particular e-service project, but rather would affect the whole e-government program. This is because this group is related to the barriers that may arise from political leaders and the decisions they take at the top-level of government administration. There were no problems that appeared with the political leaders with the introduction of the e-government program. As the Deputy to the Minister of MSAD confirmed:

> “There is e-government political awareness among top political leaders from the first day. There is a common belief of the value of the e-government program and its potential. That is why there is commitment to the initiative as one of the significant programs in the current government. This political belief is not limited to the senior political leaders, it is also among the lower-managerial levels.”

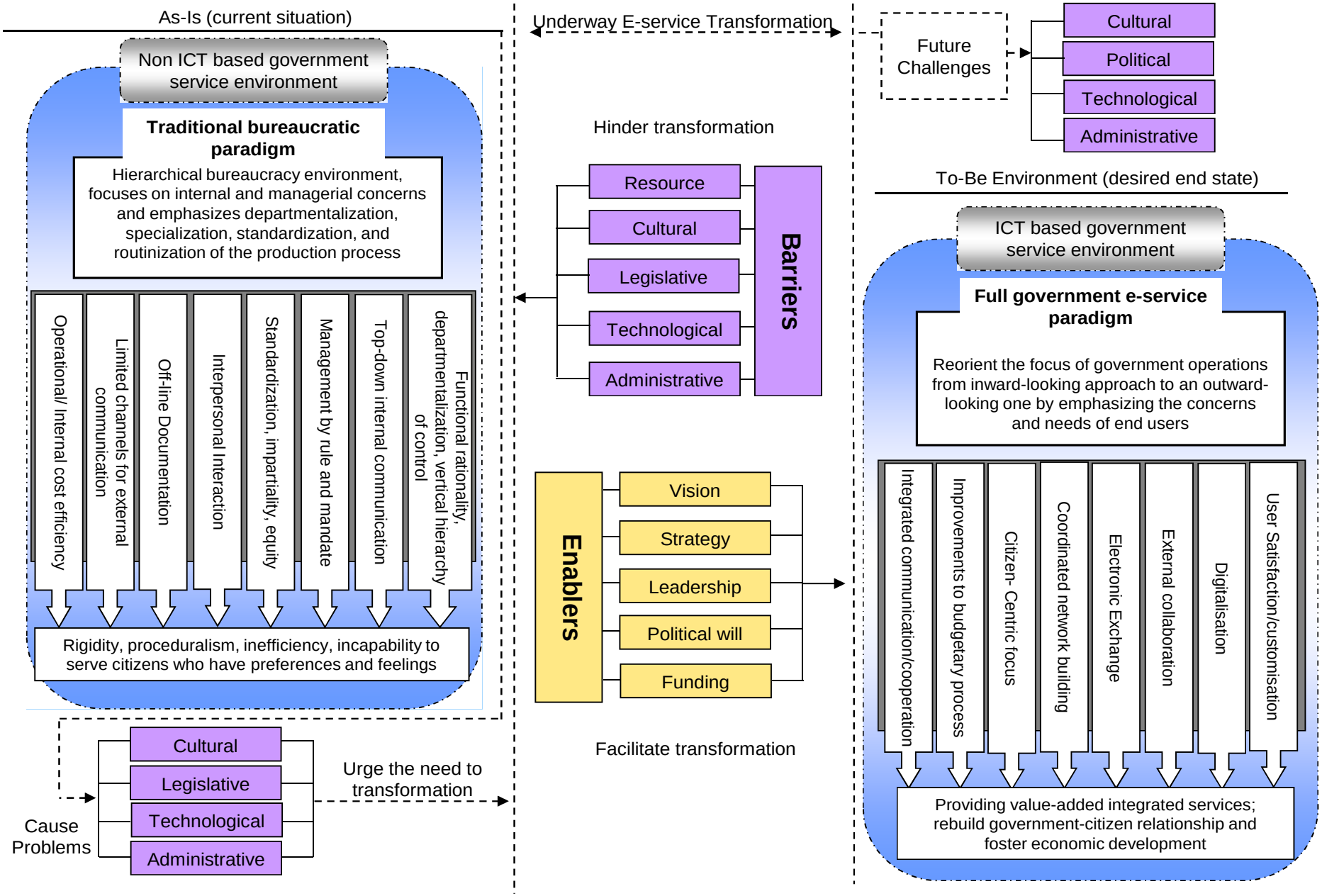


Figure 7.3: Final Framework

On the contrary, some political factors appeared to be some of the important enablers for the success of the e-service project (to be discussed in section 7.5). This leads to the emergence of the political barriers as possible future concerns. One of the projects managers expressed his fears of diminishing such political support as he said:

> "What I fear most is that the political support that protects the project starts to diminish. That is because the strong political will has saved the project from many efforts attempting to terminate it. This support gives the project the legitimacy, sovereignty and mandatory shield. If any change happens to the group supporting the projects, with other groups who don't believe in what we are aspiring to, the whole project would be at risk. So what we all want is to continue with the same group that has given us the support."

And what they feared happened, as the political shield supporting the e-government projects diminished with the resignation of the whole government after the Egyptian revolution in January 2011. The e-service projects were no more a top priority of the new government and most of the resources were dedicated to new basic strategic projects. Even the ministry responsible for the program (MSAD) was cancelled at first and was merged with the Central Agency for Organisation and Administration. This put all the e-government projects implementation at risk, wasting millions of Egyptian pounds, until a new decision from the new Cabinet to appoint a new minister to MSAD in late March 2011. Then all the projects resumed with renewed political support.

7.3.1.2 Administrative Barriers

Administrative barriers existed all the way from the beginning. The problem was in the application of the new technology to the existing conditions, given that the services needed very complicated procedures. There was an inability of the governmental back offices to handle the e-services transaction and the e-government as a whole. There were no channels in the governmental organisations to handle e-services. Some organisations have no channels handled by computer in the first place and some services were very complex and required the cooperation of three or four organisations at least. So the

operations to handle these kinds of services were not very easy to manage because the ministries were operating separately. Although the political commitment to the e-government program existed, the implementation of the related e-service project was another issue. There was a lack of coordination among different ministries because they have different priorities.

The Public Sector Engagement Manager explained this organisational conflict by giving one of the famous examples they faced:

> "An obvious example of the lack of coordination between different organisations is the traffic services initiative. The Ministry of Justice is concerned with the traffic violations while the Ministry of Interior Affairs handles the licences issuing, and all fines are collected by the Ministry of Finance, in addition to insurance companies involved in the same service. So we need a very high level of sophistication to provide the service across multiple governmental ministries. Therefore, it was very hard to combine all these entities with the absence of integration between them."

Also, there were some organisations that had been working for 30 years and lost the main strategy according to which they were working. The employees lost the mission they were working for. Hence, the application of new systems is very difficult in this situation. Also, the administrative barriers continued during the e-service projects implementation as the red tape slowed down the process. The institutional development program manager explained:

> "No one knows what is required from him exactly or the opposite may happen when more than one claims the authority for doing the same task. This is red tape. You cannot determine who is responsible if something wrong happens. You cannot implement e-government in these conditions. You have to cut the red tape and create a focal point for citizens to obtain services quickly and effortlessly without the need to visit dozens of different offices."

Another Program Director added:

> "The traditional inefficient management system in the ministry has led to considerable duplication of effort, expertise and expenditures. The lengthy

> procedures and the non-standard business processes within the ministry administration have been a major obstacle. These processes were outdated, lengthy and inefficient. What made it worse is that some automation and computerization had been introduced to the same existing obsolete and fragmented business processes rather than re-engineering them."

The future challenges related to the administrative barriers focus on handling and exchanging the data among organisations. Rules of privacy and confidentiality and data whose exchange does not violate any privacy should all be determined. Again, this problem needs mandatory decisions from upper level leaders. One example raised this challenge, as explained by the Program director of the National Databases Program:

> "We conducted a workshop for the three biggest governmental organisations having the biggest databases in Egypt (Civil Status Authority, Income Tax Authority, and National Authority of Social Insurance). The objective of this workshop was to show the role the technology can play in data exchange among organisations. The problem we encountered in the workshop is the rejection of these authorities to discuss their data with the others. Civil Status Authority was reluctant to provide its data claiming it is "confidential". Such conflicts act as inhibitors and slow down the progress of the project. As a solution for this problem, the G2G project is considering "service oriented architecture" to erase the fear of exchange of data. SOA allows efficient, secure data exchange among various governmental agencies using various technologies. However, this is still one of the challenges given that the data bases have not been completed yet and still the cultures of some of the organisations mean they refuse to exchange data even with the new guarantees of data confidentiality."

7.3.1.3 Resource Barriers

Egypt is not a rich country. According to the interviewees from MSAD, the government does not begin all projects at once, and each project does not cover all areas at once either. Except for the projects funded by Microsoft-Egypt, all e-government projects depend on the MSAD allowance from the

government budget. The ministry budget is EGP100 million a year (£10 million), and is not all dedicated to e-government projects.

A senior manager in MSAD stressed the wise distribution of such budget:

> "In the case of scarcity of resources, budgets should be directed to any effort towards the establishment of e-government in some selective areas that have a high chance of success and provide beneficial government services to the citizens, to avoid increased frustration of citizens about the burden on the economic resources."

Operational costs for some of the projects on MSAD's side were too high for it to sustain them with its limited budget. Funding other projects was a problem and resulted in the interruption of their progress or impeded the implementation in the rest of the country, as confirmed by one of the projects managers:

> "We wanted to start working in other governorates in parallel with the provision of the subsidised food commodities; we find no available funds for the pensions and the project stops accordingly. The budgetary problems existed and we suffered from them and they caused some delay in some services projects. When we ask for a budget from the Ministry of Finance, they tend to be lazy in approving the budget right away and they don't provide the project with the assigned budget all at once. Instead they pay it in instalments and some of these instalments get delayed resulted in the interruption of the project's progress."

Concerning the human resources, at first, there were very few people working on e-government projects from the MICT, Microsoft and MSAD. The reason was that there were no technical stuff capable of running, operating and maintaining the new systems. In some projects, such as e-signature, there were only 11 specialists with experience in that area. So the project had a bad shortage in skilled persons and the rest of employees needed training.

A project manager considers this the most challenging barrier he encountered during the project implementation:

> "The most challenging barrier I have personally encountered was the lack of ICT skills among employees. We needed to depend on highly skilled, young, well-educated staff as a starting point for the project development toward the transformation to an electronic service provider."

The project management tried to overcome this barrier by selecting and hiring the most promising graduates from faculties such as the Faculty of Engineering, and the Faculty of Computers & Information Sciences. The project also held very professional workshops and training programs for such new employees. Then a new barrier occurred:

> "This unfortunately raised another issue which is how to retain those talented employees after being qualified. After attending all training courses, they received very good offers from private sector companies. However, the ministry, as a government organisation, were unable to retain the top qualified staff due to their low payment system."

This barrier is still challenging in the foreseeable future. MSAD still has shortages in its employees. Given it has projects in all the ministries and related organisations, the projects managers are still few. The problem is that the ministry has long procedures for new appointments, not because of bureaucracy, but because of the presence of many measures to ensure the qualifications of the person. Surprisingly, the total number of employees in MSAD is less than 400.

7.3.1.4 Technological Barriers

From the technological infrastructure perspective, there are some challenges that affected the development of e-service projects throughout the different stages. Examples of these challenges include the lack of security systems for the information system, the need for high security constraints and security levels, hosting availability, and the need for several servers for the gateway. There was also a problem with the absence of unified standards for the mechanisation of governmental authorities, the weak governmental enterprises technology readiness and the inadequate computerisation of third parties such

as local banks. Moreover, when the IT was available, the government agencies used it for automating the current systems, and did not apply new solutions more efficiently and effectively.

Many participants emphasised the existence of these barriers on many occasions. One project manager confirmed:

> "Problems related to infrastructure limitations were faced when the project started. At the beginning there was not any technological infrastructure. There was not any Internet access and there was a need for more budgets for the hardware and software. This resulted in some deficiency in the service while availing different phases' results when huge numbers of users try to access the application in a very limited period of time."

The advisor of strategic projects added:

> "There are still some issues in the work cycle system such as the problem of importing all the knowledge and technology needed from abroad. Also, the computerised system is rigid; once created you have to stick to it for some time. So the system needs to be upgraded. After a few years the system needs to be replaced with another one with a higher level of automation."

The digital divide is a big challenge. Egypt has a population of 80 million people with 10 million telephone lines, with a tele-density of 10%. The gap between people who have access to the Internet and those who do not is very broad in Egypt. This barrier did not interfere with the project implementation but it does affect the attainment of its objectives. Those without access cannot learn essential computer skills, cannot access information that can provide economic opportunities, and cannot share in the benefits of e-government.

The technological barriers remain as a future challenge too. These challenges hinder the majority of the population from benefiting from the e-government projects. In addition to the low penetration of the Internet and the digital divide mentioned earlier, there is low penetration of PC and computer literacy. Additionally, the challenge lies in the constant need to upgrade the security settings, the encryption keys and algorithms. Interoperability and multiple

service delivery channels for future projects is also a challenge from a technical perspective, as the information systems have to be integrated with numerous other organisations.

7.3.1.5 Cultural Barriers

The cultural barriers are the main barriers in front of Egyptian e-government progress. The challenges started as problems before the commencement of any e-service projects and put the whole initiative at risk. The first in the cultural barrier is the resistance to change from both service provider and service recipient. Both the provider and the recipient are not used to electronic types of interactions. Human beings tend to fear and refuse things they are not used to. So, most ordinary Egyptians have a negative stance against anything electronic and would only use “traditional” paper-based service channels. They prefer the old situation with all its drawbacks over the new situation because they do not know whether it would carry good or bad news. The manager of the family card system also confirmed:

> “The obstacle lies in the culture of the citizen who used to deal with the paper card and may never have dealt with electronic equipment, making it difficult for her/him to get acquainted with the new system.”

The resistance to change is also common among Egyptian government organisations, and even increased when applying e-government to improve and develop its services. The reason is that these developments require fundamental changes in current bureaucratic procedures, while the employees still follow the old regime they are used to. Some of them do not know anything other than doing this job this way; they fear the loss of a certain authority and power or being fired. Some others know they are not skilled enough and they fear starting something new from scratch as they do not want to learn something new which they are afraid of. They also fear that the new position holds more duties, or will deprive them of their source of power, or they will be replaced by younger, computer-literate civil servants. The most difficult situation is when some managers are not really keen for change. They are indifferent

about applying new systems to their work cycles. They are not aware of the advantages of the change. And if the managers are not really enthusiastic about any project, there is the probability of its failure. The director of the National Databases Program explained:

> "The resistance to change plays a role as barrier since each ministry is run differently and each one has its own policies, its own data collection methods, its own processes and its own definition of certain terms e.g. the definition of budget may differ from one entity to the other in terms of what is to be included within it. In order for these ministries to collaborate and communicate, harmonization of the policies, of the methods and of the definitions is necessary; the problem is that each ministry has become accustomed to the way they handle things and refuse to cooperate or make changes."

Besides, there are many service providers who disagree and feel a conflict between their benefit and the introduction of the electronic service, as it makes it very difficult for anyone to use illegal ways to make extra money. Some employees manage to have illegal income from the traditional way of doing the service. They take advantage of the citizen's lack of knowledge of the work flow cycle and exploit the citizen's need to get his service done. Sector Director confirmed this when talking about one major project:

> "These problems occurred especially when we were automating in municipalities. Some corrupt employees fought against the introduction of the electronic services because it will shrink their extra illegal income. They stated many silly reasons for these rejections such as: there is no place to deploy the new developments, no budget, etc. I am not exaggerating when I say that the introduction of the project deprived them of millions of pounds! It was quite an experience I must say. It fights corruption. That is why the political sponsorship was essential to carry on in the project."

Another constant cultural problem is the awareness of the e-government services. It is very low. Although there are around 600 government services available online, citizens and enterprises are not aware of the web addresses through which electronic services are available, or even whether e-services

exist at all. It is a disappointment when the citizens for whom these services are offered know nothing about them. The government does not pay attention to services marketing and people awareness and this is a huge drawback in its performance. Although it puts much effort in providing these services and strives to automate and re-engineer the processes, their efforts do not fully achieve their full benefits and advantages to the maximum, simply because no one uses them.

The problem of awareness continues as the decision on how to increase awareness is very difficult to make and not simple (political wise). The government faces disapproval from opposition parties when it advertises on television because of the advertisement expenses. The tricky point in advertising the services to increase the awareness is, if the government has a certain budget, how much of this budget should be used for advertising. Then, should this amount be spent on advertising at all, or should the government use it to implement some other project. The focus of the government in most cases is on projects.

One solution may be outsourcing the awareness marketing, meaning letting the mobile network companies, for example, advertise their provision of governmental e-services through their network. Other solutions may include holding seminars in universities, printing relevant information and the government website on tickets, document and brochures that people use on a daily basis, and word of mouth from government employees to citizens when they come to receive the service through the traditional way.

7.3.1.6 Legislative Barriers

Not all legislation stands in the way of transformation, and Cabinet decisions are easily taken or altered. However, in Egypt it is very difficult to change laws; it takes many years to change a law or to issue a new one. It takes too much time for the new law to be thoroughly examined. its executive regulations made ready to be presented to the People’s Council and then be approved.

Among the challenges is the lack of consumer rights laws, privacy and computer crime laws. Also the laws regarding the physical presence of the citizen are still valid but for certain services only. Some of the documents still are not electronically authenticated.

At the beginning of the program, there was some legislation that simply did not keep up with scientific developments and the means to deal with them; for example, the subject of the adoption of the electronic signature or authoritative electronic correspondence, and others. There was an absence of a legal framework governing the process of verification of identity through the Internet. During the transformation, the law took four years to be approved and it took six years to construct the Root Certificate Authority (Root CA) which has the authority to issue digital certificates to subordinate Certificate service providers.

Also, the problem is not limited to the issuance or altering of some laws; sometimes the problem deals with an existing law, but is inactive for whatever reason. An example of this problem is the electronic payment. One interviewee commented:

> "The only problem I can recall related to the legislative barrier is the electronic payment. It is a problem concerning the Ministry of Finance. The ministry is not very active to facilitating this issue. Although the decision has been made for electronic payment, the regulatory standards are not specified yet. Therefore, the decision is not active."

Only 10% of the Egyptian population are bank clients (MCIT, 2010). Among this 10%, the majority is reluctant to use electronic payment for any charges of the electronic service and security fears have arisen from their use.

The legislative barriers will remain a major concern in the future of e-service implementation. The reason is that identifying all necessary legislative changes cannot be anticipated and addressed before the start of the project. The introduction of new legislation is a long process that requires extensive evaluation and assessment. Such lengthy processes may slow down the implementation.

7.3.2 Identified Enablers

7.3.2.1 Political will

According to all interviewees, political will and support are the ultimate driving forces for the successful implementation of e-service projects in particular and the e-government program in Egypt in general. The existence of an entire ministry responsible only for the e-government program is convincing evidence of such political support. One of the Projects managers confirmed that this factor helped in overcoming a lot of the barriers that were encountered in the implementation of their projects such as resistance:

> "What helped us is the strong political will. We have got permission from the Prime Minister and the Minister of Justice to move ahead in the project implementation and report back to them with any resistance we face, so that they can deal with it. So when the employees know that the project implementation is sovereign and mandate, they tend to give up resisting."

One other participant tied the strong political commitment to the sustainability of the project itself:

> "Number 1 enabler is top management support. This is the most important thing we need. This is because when you are about to make institutional change, you would face a lot of problems, either resistance or other. The only thing that can control the process and enforce the change is top management willingness and commitment. You could have made very good work, outsourced some activities and done some in-house, and used all the resources you have to get the job done as it should be. This could be a waste of time and be put on shelves if you could not enforce it."

Even the Enterprise Services Director in Microsoft confirms the importance of this factor:

> "Absolutely, with no exception, top political level in all ministries and even the Prime Minister are totally supporting e-government projects. The top support helps and facilitates all factors and overcomes any barrier because it believes that e-government is the future. In Microsoft, we were very selective. Meaning

> that in every project we implemented, we had a political sponsorship. When the high level management (minister or even the Prime Minister) decided to move on in carrying out a project, every barrier is facilitated. When we first started, the Prime Minister was still the Minister of ICT. When he became the Prime Minister in 2004, he gave the mandate to implement all e-government projects. This political sovereignty overcame any obstacle."

The e-government program in Egypt acquired strong managerial and political leadership that provided time, effort, money, resources and the political, economic, social and technological climate. It is fortunate that the Egyptian political leaders are fully aware of the importance of the technology role in today's world. Therefore, they know the importance of these kinds of projects, so they listen to any complaints wholeheartedly and discuss ways to overcome any barrier in the way of projects implementation. If they are not convinced by the importance of the projects, they will not try to solve the problems.

7.3.2.2 Leadership

Leadership is perceived by some interviewees as a very strong enabler that is essential for the success of the transition to e-government. This is true in terms of guaranteed long-term commitment steps and stages of the project and the provision of government and public support to this project at all levels. Therefore, the officials with culture and a knowledge of the transformation to the new system are a necessity to the attainment of the real objectives and fruitful results associated with this work. Most MSAD officials agree with this enabler, as they consider that strong leadership is an extension to strong political will, but only on a narrower scale (organisation wise). Enablers both protect the e-service projects from the risks and efforts made to try and hinder their success and have the motivation to get people satisfied. One of Project Managers clarified:

> "The right, strong leader has full authority. He is willing to take risks, is willing to secure funds for the program, will commit time on an ongoing basis, and will publicly endorse and advocate for e-government. In addition to strong political leadership at the top level, e-government requires strong management at every

> organisational level. This leadership should be committed to support efforts that lead to a shift towards e-government through the provision of time, effort, money, resources and the political, economic, social and technological climate, which contributes to the launch of workforce capacity and creativity."

Many interviewees defend the influence of this factor by explaining that e-government offers a chance to rethink the role of government; and because e-government is not a law or an order from political leaders, it requires a change in how officials think and act, and how they view their jobs.

> "We don't really face any resistance from the top management in the organisation. They tend to be very supportive to change and development. This is because this development would have a positive impact on their organisations' performance and progress. Even with the busy schedules of the organisations' top-level managers, they always try to find some time to discuss the upcoming projects in their organisations and ministries and give appropriate support."

7.3.2.3 Funding

The availability of some financial resources to some of the e-government projects in Egypt has been mentioned as a major factor in their success. The re-investment model Microsoft provided to the government is one of those important enablers. A certain percentage of the funds Microsoft received from the government are funded back to the government in the form of projects. Because Microsoft funded all these projects and their activities used the re-investment fund, the projects were not restricted by governmental budgets and boundaries, and most importantly, they were not affected by the Egyptian scarce resources and economic barriers. One Microsoft manager explained:

> "Funds are connected with savings. And the agreement with Microsoft played an important role. Microsoft gave the Egyptian government one of the highest discounts it has ever given for the licence. This was because the government succeeded in transferring their intentions and commitments to the Microsoft corporation. Another discount given to the Egyptian government was in the form of a re-investment agreement with Microsoft. A part of the funds paid by the

> Egyptian government for the Microsoft licence will be re-invested in the Egyptian e-government project."

Sufficient funding for these projects is certainly an incentive, especially when these projects can be cancelled because of a major cost increase. Other than projects funded by Microsoft, some e-service projects do not have any financial problems, as they do not depend on the government for funding. These projects are implemented by the Information Technology Industry Development Agency (ITIDA), a division of MCIT. Although it is a public agency, by law the agency takes 1.5% of revenues of all companies working in the communication and information technology field.

7.3.2.4 Vision

The Egyptian government has established a very clear vision for the initiative which is that "the Egyptian government will be able to deliver high quality government services and in the format that suits the public". It has been perceived that vision is one of the utmost factors that should be considered before any e-government project sets off. According to all interviewees, a shift to e-government requires a profound, clear and mutual vision by government leaders, parties, the private sector, civil institutions and citizens who expect to benefit from this transformation. In addition, it is essential that this vision be formulated in cooperation with these parties to ensure its success. This has even been agreed upon from the projects managers, sector directors and program directors, as one confirmed:

> "The most important plan that is followed is setting a clear vision, along with its relevant objectives, and aligning all relevant stakeholders to that vision."

This was confirmed by another project manager:

> "It is essential before considering e-government to begin the planning process by establishing a broad vision of e-government that is shared by all stakeholders to achieve whatever it is designed to for all of them."

And one program director added:

> “Common vision had to be ensured, as well as building a sense of ownership within all relevant stakeholders. This could not be done without adopting a clear well-prepared strategy in building e-government. Having clear vision and defining a short list of priority areas is a very important enabler in my view.”

Thus, by stating the previously mentioned vision, the Egyptian government has pictured what its organisations want to provide in the future in open terms. This vision provided the road map for the future direction of the e-government program and offered criteria for measuring the success of its projects.

7.3.2.5 Strategy

The final enabler emphasised by all the participants is the strategies used to implement the projects. The selection of strategies used affects to a great extent the success or failure of the projects. The reason is that the strategy is based on comprehending the current reality and its problems, so as not to let this transition lead to the transmission of existing problems to the new electronic environment. This strategy must put in place standard specifications for everyone to follow as the project is implemented.

Senior officials who are responsible for the projects emphasised that each project involves many changes and develops a specific plan of action, along with a strategy to motivate the organisation towards achievement of the goals. The strategy differs from one project to another depending on the objectives, nature, and vision of each project. These can include business process re-engineering of the services, starting with pilot studies, centralising the design, decentralising the implementation securing top management’s support, capacity building, outsourcing, co-ordination between all entities, development of the work environment and planning for contingency.

There was, therefore, a strong need to build a concrete strategy for promoting e-services in all the projects. For example, the manager of the institutional development program emphasised that:

> “The purposes of these organisations are updated with the new requirements and the latest changes. When you even create a business, as time goes on, this business is affected by several factors, internal and external. So the business has to be aligned with these factors. The first thing to do within these institutions is to specify a clear strategy, a vision and a mission. You have to make sure that this strategy is aligned with the objectives and goals they want to accomplish, and at the same time be aligned with surrounding factors. If they don’t know how to formulate their strategy, we use the help of experienced consultants to do that. Then we look to the organisational structure to see if it fits this strategy.”

7.4 Process of E-Service Implementation

In section 7.3, the proposed framework discussed a number of barriers and enablers for government administrators to take into consideration in the process of e-service projects implementation. According to the e-service projects managers, sometimes they encountered uncontrollable circumstances in different phases of this process, despite the various initiatives implemented by the government at different levels. Hence, this section describes the process through which e-service projects are implemented, from the beginning of the initiative until the fully functional e-government service is provided. The process explains the different stages, actions and strategies of e-service projects implementation. Explaining the different steps and stages is believed to help projects managers consider the process in the implementation of future initiatives, and take necessary precautions before starting. The process of e-service projects implementation is illustrated in Figure 7.4.

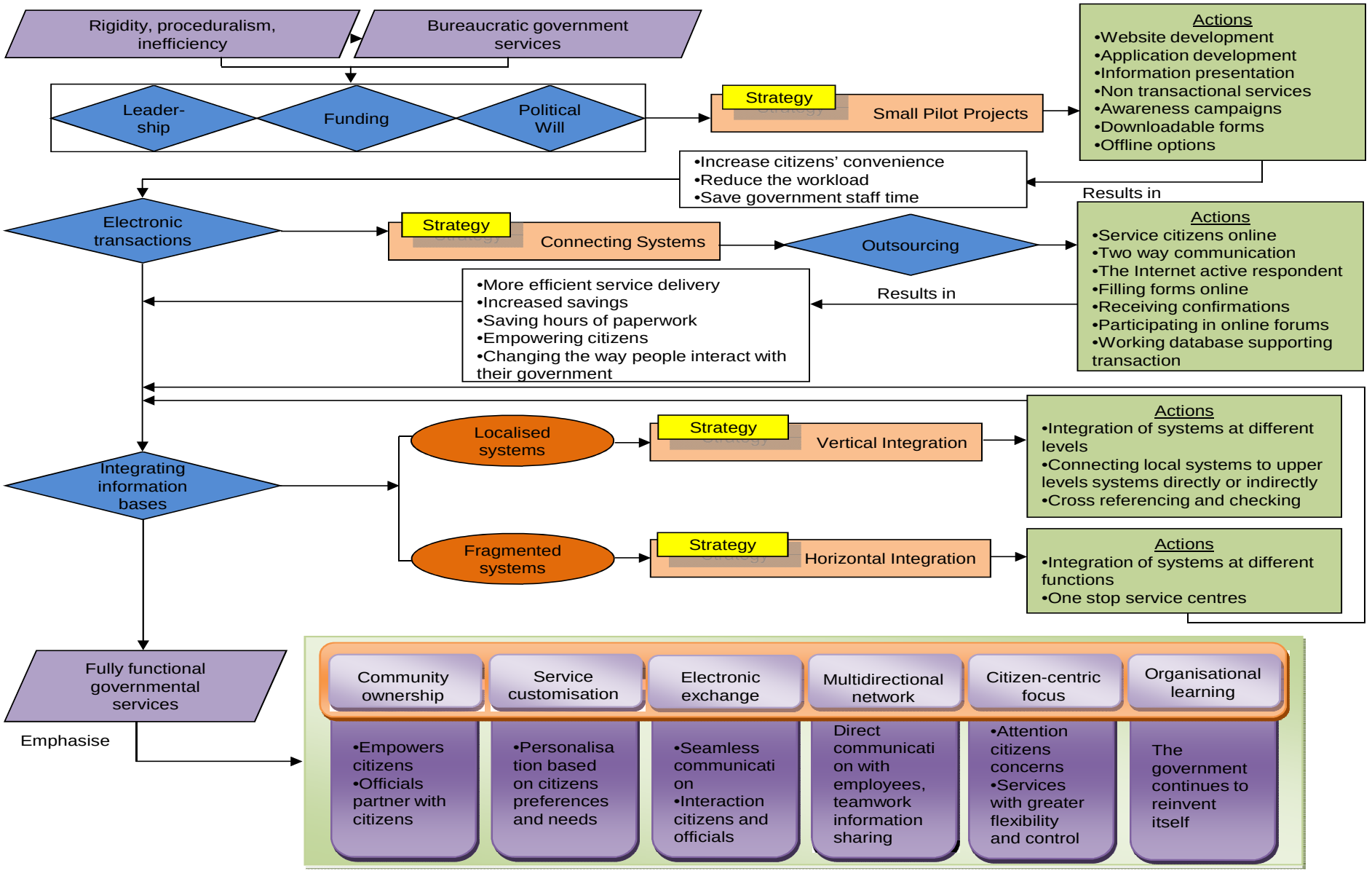


Figure 7.4: Process of E-Service Implementation

The e-government service project initiative originates from the need to overcome several problems. Examples can include the complex structure of government organisations, high cost of providing the service for both the government and the public, low service performance, inflexible systems, bureaucratic red tape, and increased corruption. All these problems lead to the slow provision of governmental services and low citizens' satisfaction. The Minister of State for Administrative Development confirmed:

> "The old, traditional way of providing governmental services was negatively associated with citizens' satisfaction and their trust in government and the public employees. Citizens were generally dissatisfied with the lack of transparency and the high cost associated with the provision of the service. Even when the cost is not very high, the citizens encountered some problems with corrupt employees doing illegal practices to have more income."

The solution to these problems, from the interviewees' point of view, is to develop e-service projects. In addition to overcoming the previously mentioned problems of the bureaucratic structure of the Egyptian government, the e-service projects attain some important benefits such as providing help and guidance to citizens, the geographical spread, increasing interaction with citizens and with other governmental entities, work facilitation, clarity of procedures, increasing investments, in addition to increasing trust and financial savings. The Minister advisor of strategic projects at MSAD added:

> "We believe that electronic services projects ultimately increase transparency, and interactivity; which are very important elements that positively influence citizen satisfaction and motivate their trust to use government services."

Although the Egyptian citizen does not exert much pressure for these e-service projects to happen, there are different enablers for these projects. As explained in section 7.3.2.1, political will and support are the ultimate driving forces for the initiation and development of e-service projects Egypt. In order to achieve the project objective, the relevant political entities ensure a long-term commitment by assigning dedicated leaders for the projects and provide financial support to the projects at all levels.

The government then begins with a small pilot project which is implemented in several ways. The project could be offered to a sample of the population, availed to a small geographic area, or provided as an option for all citizens to try. This strategy is important to begin with for many reasons. The first is to make the citizen who is still used to the traditional service provision to be aware of the new e-service gradually. The second reason is to measure the feasibility of the project before it is generalised, either vertically for all the government levels, or horizontally for all the government functions.

Finally, the government should not increase the operational cost at the beginning of the project so that they minimise the risk of failure and the citizen does not endure extra cost and develop a negative attitude towards the new e-service. Some information about the new service is offered online at the start of some awareness campaigns to increase citizens' familiarity with the project. The pilot project results in increased citizen convenience, reduces the workload for government employees and starts reaping the previously mentioned benefits of the e-service projects.

After the success of the pilot project is assured, there will be the need to offer an efficient way to conduct transactions. In this stage, ICT plays an important role in conducting two-way communication rather than one-way in the previous phase. Data bases should be completed. Outsourcing is a good strategy in this phase of project implementation for the purpose of transactions fulfilment. Partnerships with major IT corporations are needed for the inauguration of suitable web interfaces and security procedures.

Offering a transactional service at this stage provides many benefits for both government and citizen. Delivering services becomes more efficient and savings began to increase. The increased interaction between citizens and the government leads to increasing trust, enhancing transparency, and empowering citizens. The work burden is less on government employees as citizens start to use the electronic channels, saving hours of paperwork. After this stage, completed databases for different governmental levels within the same ministry should be integrated so that the information can be shared easily.

After completing the databases so that transactions can be conducted between the government and citizens, these databases should be integrated so that the e-services can be easily offered though different levels of the government and also through different service functions. In most cases, more than one government entity participates in developing and implementing the e-service project. Each governmental organisation has its own system and database. In this stage, all participating entities should integrate their systems to provide one-stop portal to provide an efficient service to citizens.

When the project completes the data base integration, it is able to provide seamless, fully functional e-services. This final phase stresses the six principles discussed in section 3.3.2: community ownership, service customisation, electronic exchange, multidirectional networks, citizen-centric focus and organisational learning.

Not all e-service projects in the Egyptian government are at the same stage of their implementation. Some are finished, some are just beginning and some are in progress. The director of the government service program confirmed

> "There are 695 government entities in the Egyptian government, they all offer different e-service projects, and they are at different stages. The implementation of the projects cannot go at the same speed; otherwise, some projects will be hindered by other, slower projects."

However, the Minister of State for Administrative Development described the current phase of the Egyptian e-government service projects as transactional:

> "The majority of the projects are in the transactional phase. Very few projects have completed the integration phase of e-service provision."

The barriers and enablers affecting the implementation differ from one project to another. However, they all fall under the categories described in the previous sections. The success of the projects lies in enforcing the enablers and overcoming the identified barriers along the process of implementation. Also,

the research highlighted the project's transferability and sustainability after project completion to ensure its success.

7.5 Chapter Summary

This chapter presents a qualitative analysis across all the cases investigated in this research. The findings are obtained by looking at the critical factors (barriers and enablers) based on the interviewees' perceptions. The findings are also obtained from matrices and networks developed after the interpretation of all interviews and analysing the documentary data. Also, the relationships among major factors and/or categories are also discussed. Based on the analysis, the framework is modified.

The researcher identified six groups of barriers (Political, Administrative, Resources, Technological, Cultural and Legislative). There is no evidence that all these groups exist at each phase of e-service development and implementation. Some have an effect before or at the start, some during transformation, and some appear as possible future challenges. However, some of the barriers are tied in with the project from beginning to the end.

On the other hand, the five identified enablers (Political will, Administrative leadership, Funding, Vision and Strategy) are associated with and essential for the development of the project, and are not affected by the different project phases.

8 CHAPTER EIGHT: VALIDATION OF RESEARCH FINDINGS

8.1 Introduction

In the previous two chapters (Chapters 6 and 7), findings from the analysis of each case and the cross cases analysis were presented and discussed. The relationships between major factors and/or categories were also examined. Based on the analysis, the framework was modified.

This chapter discusses the procedures and measures adopted to ensure the quality and rigour of this research's findings as a qualitative research and the usefulness of the developed framework. This is done by discussing some of the well known strategies that confer rigour on qualitative analysis, and how they are adopted in this research. These strategies are purposive sampling, multiple coding, triangulation and respondent validation (Barbour, 2001). Table 8.1 summarises these strategies, the concerns they are thought to address, and their realistic potential.

Table 8.1: Strategies for Assessing Qualitative Research Rigour

Strategy	Concerns Addressed	Realistic Potential
Purposive Sampling	Bias	Enhancing sample coverage and providing a framework for analysis
Multiple Coding	Inter-rater reliability	Refining interpretations or coding frameworks
Triangulation	Confirmation or refutation of internal validity	Corroborating or, more often, refining findings
Respondent Validation	Confirmation or refutation of interpretations	Corroborating or, more often, refining findings

The rest of this chapter is organised as follows: after this brief introduction, the basics of each of the technical strategies will be discussed in a separate section, where section 8.2 discusses Purposive Sampling, section 8.3 discusses Multiple Coding, section 8.4 discusses Triangulation and section 8.5 discusses Respondent Validation. Also, an explanation of how these strategies were used particularly in this research is given. Due to its relative importance, respondents' validation has been given special emphasis in this research. There will be a discussion of the validation sessions held with different experts, consultants, advisors, projects managers and academics. The purpose of these sessions is to validate each of the following: the final framework, the identified factors, groups and their relationships, the structure of the case studies, and finally a validation of the overall findings. The chapter then concludes with a summary. The outline of this chapter is illustrated in Figure 8.1.

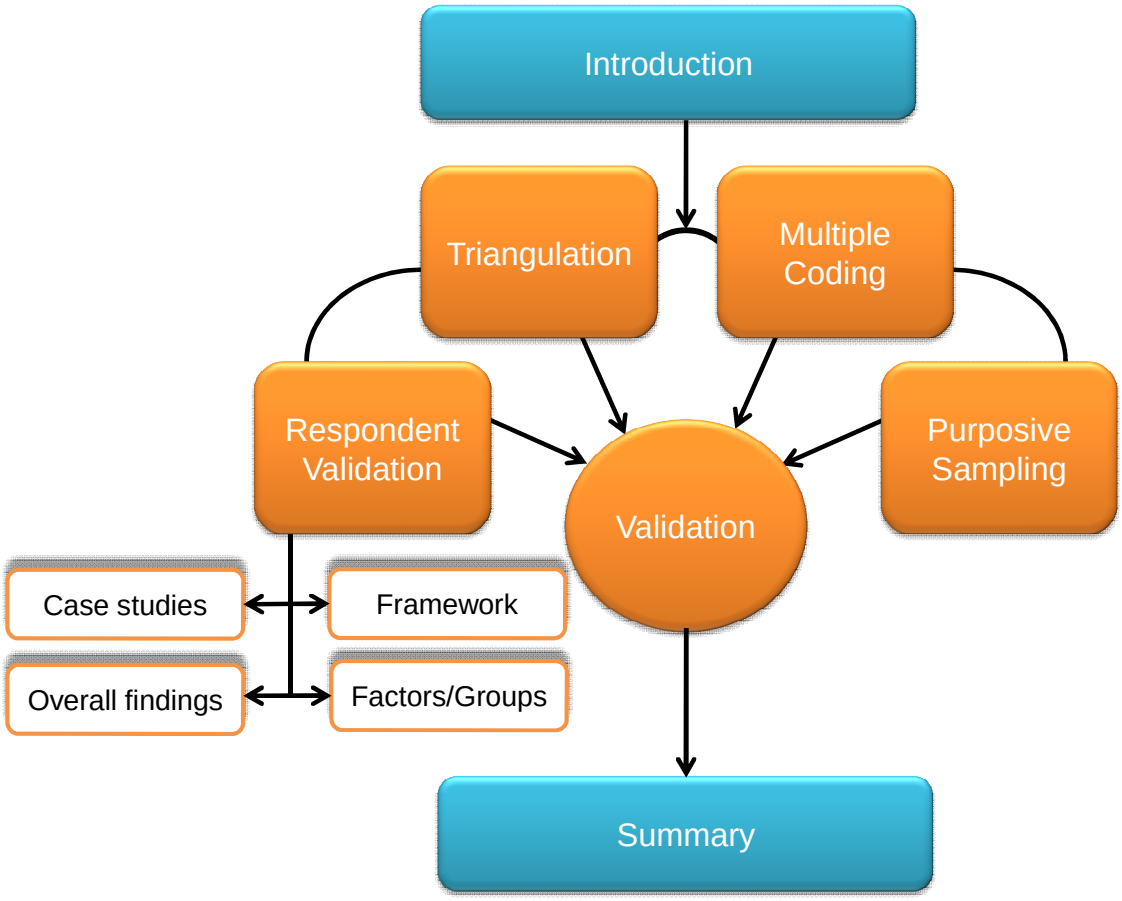


Figure 8.1: Outline of Chapter 8

8.2 Purposive Sampling

The purposive sampling strategy depends on the judgement to select cases very close to the research questions and objectives. The samples tend to be very small and are very convenient for case study research (Shaw, 1999). While the logic of probabilistic sampling lies in selecting a random and representative sample which will permit confident generalisations from the sample to a larger population (Patton, 2002), the logic of purposive sampling is suited to research with different aims. Its power lies in the selection of cases rich in information about the substantive research problem.

In considering the organisations involved in the research, it was decided that purposive, rather than random, sampling would be an effective way of selecting case projects rich in data pertinent to understanding the research problem (Marshall and Rossman, 1995). As such, purposive sampling was suited to developing a comprehensive understanding of the development and implementation of e-service projects in the Egyptian government.

Rather than aspiring to statistical generalisability or representativeness, this research chose to reflect diversity within e-government projects in Egypt. Many qualitative researches often rely on convenience samples, particularly when the group of interest is difficult to access (Barbour, 2001). The selection of cases and interviewees in this research relied on theoretical purposive sampling, rather than random statistical sampling. Purposive sampling is common in qualitative research. The reason is that the definition of the research cases is limited (the research is only interested in projects providing e-services targeted at citizens within the Egyptian e-government context). Furthermore, it allows the researcher to choose the cases. Such selection of projects helped to control variation and define the limits for generalising the findings. For this reason, this research relies on purposive (or theoretical) sampling, because it offers a degree of control rather than being at the mercy of any selection bias.

8.3 Multiple Coding

Multiple coding is a valuable strategy in validating the findings of the qualitative research (Barbour, 2001). The researcher used multiple coding to overcome any subjectivity that might have happened during the process of qualitative data analysis. The researcher asked some independent researchers, colleagues and seniors to cross check the coding strategies and interpretation of data she adopted during data analysis. This also was a core activity of many supervision meetings. However, multiple coding did not include a complete replication of results. It was useful for the researcher to have other people's opinions over segments of data and emergent coding frameworks.

Substantial agreement was found with some of the researchers who independently reviewed the coding of selected interview transcripts. Some slight variations were found in the ways that they grouped the codes and the vocabulary used. The researcher considered these variations to be common (as long as they were not significant) given the complexity of qualitative data and the range of disciplinary backgrounds and interests of qualitative researchers. In addition, the researcher considered the degree of disagreement between researchers is not significant, in relation to the content of disagreements and the insights that the discussion with them provided for refining coding frames. Another benefit from adopting multiple coding is that it provided alternative interpretations and alerted the researcher to other potentially competing explanations. This process encouraged thoroughness, both in interrogating the data at hand and in providing an account of how an analysis was developed.

In addition to checking the coding strategies with independent colleagues, the researcher was keen to debrief the analysis and conclusions to colleagues and other peers on a continuous basis. This process was pursued in numerous forms. One was discussing the emerging findings with knowledgeable colleagues to stimulate consideration and exploration of additional perspectives and explanations at various stages of the process of data collection and

analysis. A second form was presenting methods and findings at national and international research conferences to attract and answer critical comments.

8.4 Triangulation

The current heavy reliance on triangulation testifies both to the respect accorded to this concept and to its perceived value in demonstrating rigour (Barbour, 2001). According to Patton (2002) there are four types of triangulation in doing evaluation, i.e., the triangulation:

1. Of data sources (data triangulation),
2. Among different evaluators (investigator triangulation),
3. Of perspectives on the same data set (theory triangulation), and
4. Of methods (methodological triangulation).

In this research, triangulation has been used to address the issue of internal validity. This is done by using more than one method of data collection. Interview transcripts, field notes and documentary data have been combined in order to obtain a broader view. The use of multiple sources of evidence (especially field notes and tape recorded interviews) allowed the researcher to address a broader range of attitudinal and behavioural issues. Especially for case study research, it is a major strength to use many different sources of evidence (Yin, 1994; Golafshani, 2003).

However, during data analysis, some problems occurred as data collected using these different methods came in different forms and were difficult to be compared with each other directly. However, similar findings were produced from these different methods which provided corroboration and reassurance for the researcher that the findings and conclusions are convincing and accurate. Figure 8.2 illustrates this case (similar findings from different sources).

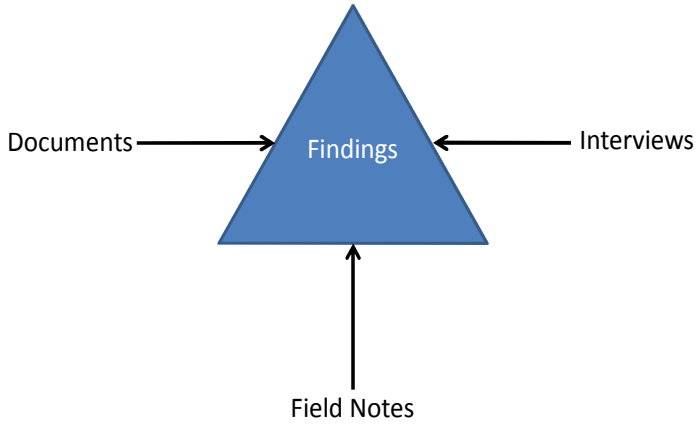


Figure 8.2: Convergence of Multiple sources of Evidence

8.5 Respondent Validation

The final technique used to validate the findings in this research is respondent validation. The use of respondent validation ensures stability. Checking the results on completion of data collection, or of the whole study with the respondents, would meet the requirements of reliability (Long and Johnson, 2000). Using this technique, the researcher cross checked the research findings with some official seniors from the selected governmental organisations whose reactions to findings helped refine explanations – as did those of the key informants. The researcher did not disregard her own interpretations in favour of those of respondents. Nevertheless, their opinions have been considered as further interpretations and suggestions for improvements in findings explanations.

It should be noted that the data collected are not made up solely from interviews. Significant elements of raw data are made up from field notes, observation of non-verbal signs, recognition of unconscious changes in tone and emphasis, and also documents collected from many informants, some of which were not acquired directly from the interviewees. Hence, there was no hesitation to return to some of the same interviewees again, but this time to validate the findings of the data analysis. This is confirmed by some literature which defined respondent validation as checking the accuracy of the findings with members of the studied group (Long and Johnson, 2000).

8.5.1 Methodology for Respondent Validation

The respondent validation process was undertaken after the framework development. The researcher tried to contact the respondents as soon as the data analysis and development of the findings were completed to avoid the problems of lack of access, or alteration of the respondents' situation and views.

The total number of interviews conducted for validation purpose was 15. It should be noted that all these interviews were conducted via teleconferencing, as it was not possible for the researcher to travel back to Egypt and conduct the interviews in person. Table 8.2 lists all interviewees involved in the validation process along with their positions, their organisations, and the total number of years of work experience.

Two days prior to each interview, a package was sent to each interviewee. This package included all the information related to the validation subject, for example the framework, the set of factors, the case studies and the overall findings. The purpose of sending this package before each interview was to give sufficient time to the interviewees to review all the relevant information in order for them to be in a position to give their feedback and evaluation. Another purpose was to save time during the interviews by being able to discuss the interviewees' opinions immediately.

At the start of each interview session, the researcher gave a brief presentation about the research background, the subject to be validated, and clarification regarding the session's expectations.

As mentioned earlier, some of the interviewees for the validation process were key informants who were interviewed for the primary data collection for this research. The rest of the interviewees for validation were identified using the snowballing technique. For example, some of them were initially recommended by the key informants, and after each interview session, the researcher asked the interviewees to recommend others whom they thought would have the experience and time to participate in the process.

Table 8.2: Interviewees for the Validation Process

No	Job Role	Organisation/Ministry	Years of Experience
1	Professor of Public Administration	Faculty of Commerce- Ain Shams University	10
2	Professor of Electronics and Communication	Faculty of Engineering- Mansoura University	13
3	Full-time Consultant	Information and Decision Support Centre	19
4	Strategic Advisor	Ministry of State for Administrative Development	25
5	Head of Policies and Program Sector	Ministry of State for Administrative Development	18
6	Deputy to the Minster	Ministry of State for Administrative Development	25
7	Administrative Sector Director	Ministry of State for Administrative Development	14
8	General Project Manager	Ministry of Social Solidarity	28
9	Head of Financial Sector	Ministry of State for Administrative Development	18
10	General Project Manager	Ministry of Education	20
11	Project Manager	Ministry of Justice	16
12	Consultant for Strategic Projects	Ministry of State for Administrative Development	22
13	Project Manager	Ministry of State for Administrative Development	15
14	Minister’s Consultant	Ministry of State for Administrative Development	19
15	Expert in the Information Society Development Office	Ministry of Information and Communication Technology	16

The respondent validation is based on many phases as shown in Figure 8.3:

- The validation of the final framework, as described and presented in Chapter 7.
- The final validation of the Relationships between Factors and/or Categories.
- The validation of Structure of the Case Studies, through which the elements of the proposed framework were identified.
- A feedback session on the rest of the cross cases findings.

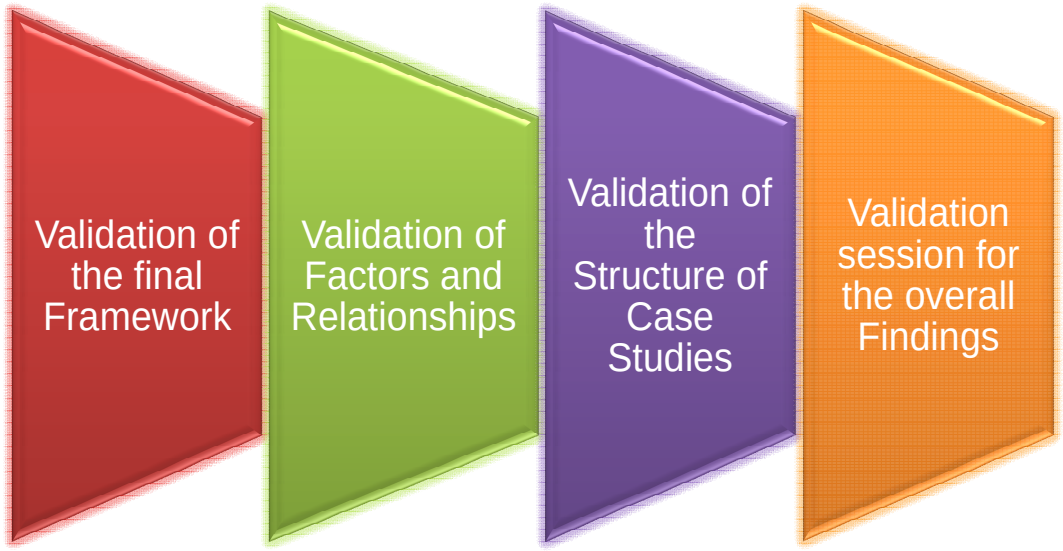


Figure 8.3: Phases of Respondents Validation

8.5.2 Validation of the Final Framework

The development of the e-service initial conceptual framework in this research was based on existing literature validated frameworks and the actual experiences of some developing countries. The modification of this framework was done by interviewing key senior officers in the government and investigating the case projects. According to the new data collected and their analysis, it was necessary to validate the framework too. The framework, including the different phases, groups of barriers and enablers, was examined

by two different groups. The first group consisted of three consultants from MSAD, whose responsibilities are to supervise the strategic e-service projects in the Egyptian government. One of the three consultants was originally interviewed during the primary data collection.

The interview with the consultants lasted for two hours; the researcher had forwarded the final modified framework to them prior to the interview. Once the framework was presented, the discussion began with the three consultants to validate its usefulness. All of them were satisfied with the amount of detail captured by the framework. They were also satisfied about the setting of the factors into groups and they were happy to classify these groups according to the development phases of e-service implementation (problems before the implementation, barriers during the project implementation, and future challenges). They did, however, emphasise the importance of including an extent for further improvements in the framework according to any emergent factors in the future.

The second group which examined the framework consisted of two academics from two different Egyptian universities, one with ten years of experience in public administration research and the other with thirteen years of experience in engineering. Both academics were also working as part-time advisors for some of the e-service projects in Egypt.

Both academics suggested a couple of minor corrections. The corrections were related to the accurate terminology and wording of some of the elements provided in the framework. They also suggested that some of the elements should be included under more than one group of barriers (for example corruption is included in the administrative group of barriers and can also be put under the cultural group). Both academics were asked if the framework improves the understanding of the e-service related factors, and hence would facilitate the successful implementation of projects. They revealed that the framework defined the phases and factors from a managerial point of view; therefore it should improve managers' understanding of each phase and its related elements, which in turn would facilitate implementation of the projects.

8.5.3 Validation of the Factors and Relationships

The identified factors and groups of barriers and enablers of e-service development and implementation were validated by four experts from three organisations: Ministry of State for Administrative Development (MSAD), Ministry of Communication and Information Technology (MCIT), and Information and Decision Support Centre (IDSC). They stated that the groups of factors, as captured by the researcher, represent a comprehensive and well-organised set, which will be valuable to implementers when they first attempt to plan for an e-service project. Their validation also provided valuable information for putting some emphasis on some relationships between the factors, modifications to some of the groups, and the addition of some enablers. It also helped to understand the importance for further improvements.

After the experts provided their views on the framework and its factors, they were asked for their opinions about the contradiction between these emergent factors and their relationships with what was found in the literature. They were asked about the possible reasons for this conflict. It was found from their answers that different environments place a slightly different emphasis on and preferences for the factors, and they mentioned different experiences from different countries that they had studied while they were planning for the Egyptian e-government. The comparison of different practices initiated fruitful discussions with the experts.

8.5.4 Validation of the Structure of the Case Studies

The validation of the case studies' structures and findings were conducted with the four projects managers who take the necessary decisions to ensure proper functioning and following-up of the operation of their systems. Some questions were asked of those managers to verify the results gained from questions during the previous interviews. The questions in the initial interviews were open-ended and the managers answered by talking without restraint about their projects. During the validation, the questions asked about the same information in more structured way. The answers added certainty that the findings drawn were correct.

For each element of the case project structure, a question was asked of the managers about the importance of including such elements. The answers included a discussion on why the elements should be integrated in the project's structure (and therefore used in cross cases comparisons). The managers provided the same answers for most elements. However, they argued, for example, that strategies used in the implementation are more important elements than the resources devoted to the projects. The reason behind this is that they see strategies as having a direct impact on the attainment of the project's objectives.

For some other elements such as projects benefits, one of the managers had another opinion. Although he found the project benefits stated in the case study results to be representative, he suggested that the researcher should divide these benefits into two levels: government and citizens. Therefore, the researcher proceeded with the recommended classification. The project benefits, as classified into these two levels, according to the suggestion are presented in Figure 8.4.

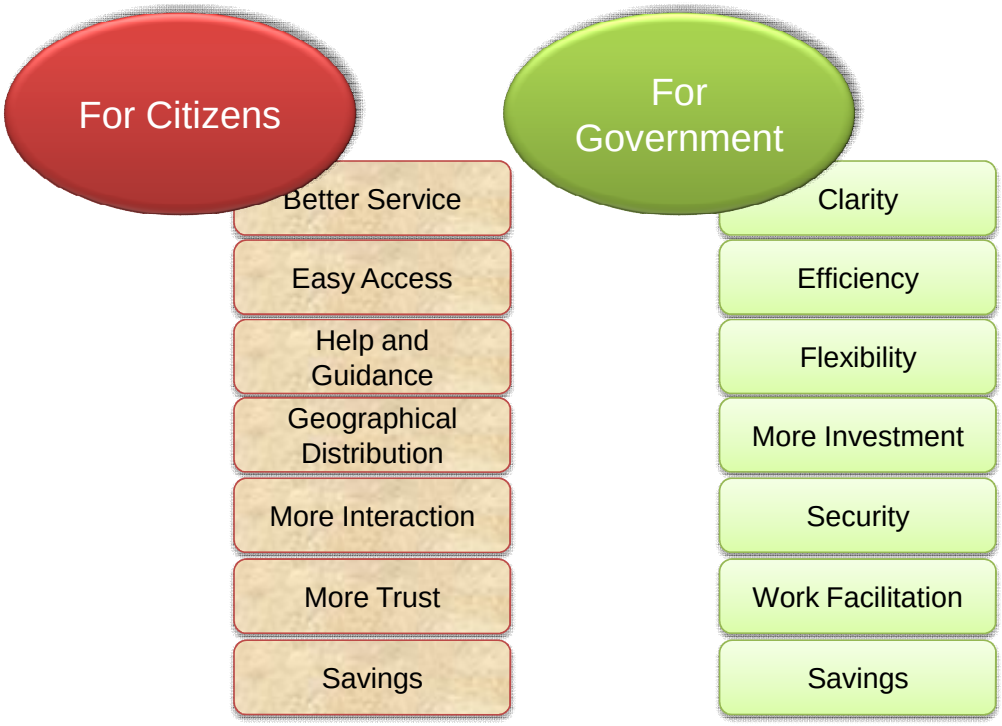


Figure 8.4: Benefits of E-service Projects

One of the managers thought that, overall, the explained structure of the projects was clear and comprehensive. He suggested changing the word ‘Enabler’, wherever it was mentioned, and replacing it with the words ‘Success Factor’. Considering the outputs of data analysis of each case project, he confirmed that they can be taken as lessons learned for further implementation in the same project or new implementations for another one.

8.5.5 Feedback Session for the overall Findings

The researcher organised validation sessions for three sector directors in the e-government program to validate and obtain their comments with regard to the overall findings of the data analysis. In addition to the Head of Policies and Program Sector who participated in the development of one of the case studies during the primary data collection, two more sector directors were invited to participate in this validation session (Head of Financial sector with 5 years of experience and Head of Administrative Sector with 8 years of experience in this position). A brief document summarising the overall main findings of the research had been sent to the participants prior to the session, and clarifications were given regarding the session expectations, so that they had the opportunity to prepare themselves. A summary of these findings was presented to them and then they started to give comments.

The first director thought that the research approach was straightforward to use. The only concern from his point of view was creating the relationships which need continuous updating – the data needed for creating the relationships is not always available and is time consuming. But given that the researcher had limited time to conduct the initial interviews, the output from the gathered data was sufficient and satisfying. He also thought that outputs of the framework were good, the framework was developed to provide an outline of the factors for e-service development in different stages, and he considered the accuracy achieved for the purpose to be satisfactory.

The second director was not convinced that the framework was something they could use every day. But when they need to look at concepts or the possible

scenarios of projects planning and implementation, then definitely the findings of this research could be of great help. He also thought that the details of the factors and elements were good. In addition, he made comments about the transferability of the experiences discussed. He believed that the findings could be used easily for the implementation of the e-services projects in which the main beneficiaries are the citizens. However this did not apply to the e-government projects dedicated to either national businesses or foreign investors. The researcher then explained that the e-government projects dedicated to citizens (providing e-services) are the main scope of this research, and confirmed that this will be explained in the research limitations.

The final participant in the validation said that an advantage of the framework was that whenever there was a need to know and understand the factors affecting the implementation process in one easy attempt, the framework would be a good reference point. He also liked the fact that the explanations made were documented within the framework in terms of the matrices and relationships created.

8.6 Chapter Summary

In this chapter, the researcher explained what has been done to ensure the quality and rigour of this research's findings as a qualitative research and the usefulness of the developed framework. This was done firstly by discussing the strategies and measures adopted to conduct such validation, and explaining what their output was. The validation strategies used in this research are: purposive sampling, multiple coding, triangulation of data sources and respondent validation.

Concerning the respondent validation strategy, an explanation of its process was given in addition to the details of the validation sessions and interviews. These sessions aimed to validate the final framework, the identified factors, groups and their relationships, the structure of the case studies, and finally a validation of the overall findings.

9 CHAPTER NINE: DISCUSSION AND CONCLUSIONS

9.1 Introduction

The main purpose of this study is to investigate the e-service projects development in the Egyptian government and examine the factors that assist and hinder these projects. The main motivation for this investigation is to assist the government organisations in Egypt to develop and implement more electronic service projects successfully. The literature review presented in chapter 2, together with the review of relevant models in chapter 3, provided some research gaps. Also, the review facilitated the development of the conceptual e-service framework. To achieve the research aim and objectives, a suitable research strategy was selected; the research methodology followed was outlined; and the rationale for selecting the approach, method and technique was given in chapter 4. Also, the details of the procedures undertaken for the data collection, in addition to the techniques and plan applied for data analysis were described in chapter 5. In chapter 6 the within case analysis was conducted through the description of the four cases conducted in this study. A detailed explanation was provided of the implementation of these projects, their key benefits, strategies used, the main obstacles and how they were overcome, and finally the resources used for these projects. A network for each of the case projects was incorporated to illustrate the outcomes of the data analysis and help with the development of the findings. The cross cases analysis was conducted in chapter 7, and thus the final framework was developed, and more descriptions and explanations about the identified barriers and enablers were given. Chapter 8 discussed the procedures and measures adopted to ensure the quality and rigour of this research's findings as a qualitative research and the usefulness of the developed framework. This was done by discussing some of the well known strategies that confer rigour on qualitative analysis, and how they are adopted in this research.

This chapter aims to:

Present and draw the final conclusions on the overall research findings highlighted in the entire thesis in addition to providing a synopsis of the research, the key research contributions to knowledge, implications for theory and practice, research limitations, and recommendations for future research.

The chapter is comprised of eight sections. Section 9.2 provides a discussion of the research findings compared to those within the literature. In section 9.3, the key findings derived from the research evidence are summarised against the research purpose and objectives. The key contributions to knowledge made through this research are presented in section 9.4. Implications for theory and practice are given in section 9.5 and the overall research limitations, as well as the limitations in respect of the research methodology are stated in section 9.6. Finally, section 9.7 includes recommendations for future research; and the chapter concludes with a summary. An outline of chapter 9 is shown in Figure 9.1.

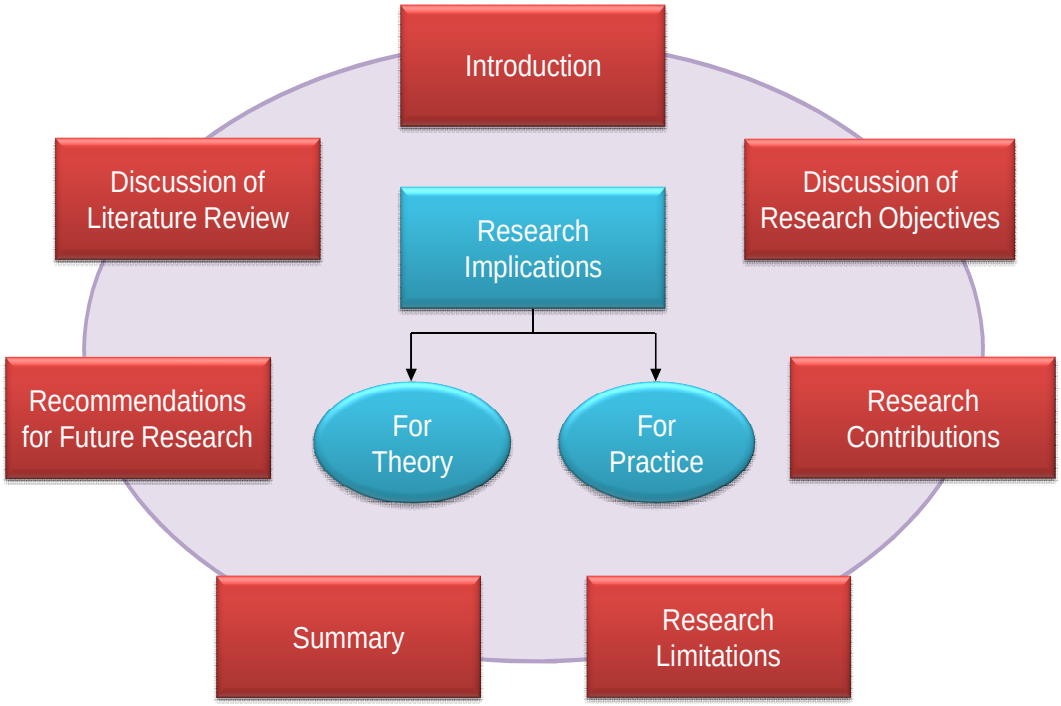


Figure 9.1: Outline of Chapter 9

9.2 Discussion of Literature Review

Within this section, the overall research findings are compared against the findings from the literature to see aspects of similarities and contradictions. The literature and the findings of this research are in agreement on several issues.

The first issue is that both literature and the research findings reject the common misconception about the transformation to e-government being easy and simply a technological change (Hamner and Al-Qahtani, 2009; Heeks, 2003). The findings indicate that government organisations in reality should not put emphasis on IT factors for transformation to e-servicing but rather stress other factors such as people, politics, emotions and culture. The interviews with all stakeholders revealed their opinions about the development of e-government being a complicated transformation with diverse challenges. Although technology is a part of these challenges, the findings show that technology is probably the easiest one to overcome as it is relatively inexpensive and very efficient (Schwester, 2009). An executive project coordinator expressed that:

> "In my opinion, although technology is just one of the aspects, it represents the least important issue. It is relatively simple to get the necessary hardware, connect networks and claim that all government organisations in Egypt are automated."

In addition, the findings of the research indicate that savings achieved from the projects justify the cost of technology. This is similar to the findings of some scholars, such as Vassilakis et al. (2005), Ebbers et al. (2008), and Ebrahim and Irani (2005). Also, the Egyptian government has tried to overcome technological difficulties by signing agreements with multinational companies such as Microsoft and IBM to provide the latest technologies to the government. One IT senior official said:

> "Over recent years, many IT companies were established in Egypt. Also, there are many experienced international IT companies that were encouraged to set up agreements with the Egyptian government. The existence of big IT companies which are capable of implementing large e-service projects, along

> with international agreements, can overcome the deficiencies in other technological aspects."

Also, the e-government service projects can be successful even when the systems are not fully automated. So the lack of some technological aspects does not affect the success of the projects significantly. For this reason, the technological barriers are regarded as a lower priority compared to other groups of barriers. The Minister of State for Administrative Development stated:

> "We consider automation (ICT in general) is a tool not a goal, the goal is to develop an effective work system, even if it is not fully automated (some parts of the system will remain manual). That is why one other important way to improve the work system is to precisely articulate the job description and unify procedures; and those are more significant issues than the technological ones."

Although they mentioned various technological issues, the majority of the senior officials recognise the considerable advancement of the ICT infrastructure in Egypt over recent years. They believe that technological issues are not the major barriers for developing e-service projects and can be solved in a short period of time.

The Head of Policies and Program Sector confirmed:

> "We encountered some technological barriers related to the infrastructure at the beginning of implementing the e-service projects and the weakness of technological initialisation in some government organisations. This has been improved now, given that there are now communication channels between organisations, the availability of modern technologies, completed databases and the rapid spread of the Internet connections. ICT has enhanced the output. Thanks to ICT, we now have complete databases, ease of access to data and data exchange,"

The opinions that emerged from the research findings indicated that the process of implementing e-government projects in developing countries such as Egypt is more difficult than in developed ones. These findings are supported by many studies (Chen et al., 2006; Heeks, 2002b; Dada, 2006; InfoDev, 2002;

Schuppan, 2009; Hamner and Al-Qahtani, 2009; Basu, 2004; Hassan et al., 2011a). There are many reasons for this according to many interviewees, including difficult economic conditions, weak human assets in developing countries and the gap between developed and developing countries in Internet technological infrastructures, practices and usage.

The Minister advisor of strategic projects confirmed:

> "Egypt, as one of the developing countries, suffers from different problems that affect the progress of its strategic projects including e-government services projects. In addition to the lack of sufficient capital to develop the necessary national information infrastructure, Egypt also still suffers from a lack of internal knowledge and skill to develop suitable and effective policies for establishing and developing strategic e-government service projects. Egypt is still, unfortunately, dependent on the expertise of multinational companies."

Lack of capital and being dependent on the multinational companies is not the only problem that makes it difficult to develop e-government service projects in a developing country such as Egypt. Problems also lie in the lack of financial resources to implement these projects internally without depending on outsourcing. That means that the implementation of the projects does not only depend on the expertise of multinational companies, but also depends on them for funding. This is quoted by the MSAD advisor for strategic projects:

> "Egypt is not a rich country. The government cannot start and implement all projects at once. And each project does not cover all areas at once either. The ministry budget is EGP100 million a year, and not all of this is dedicated to e-government projects. This is relatively little compared to other developed countries (UK £700 million, France 2 billion Euros)."

Based on the literature, the administrative group of barriers include poor organisational infrastructure, complexity and poor project management, lack of coordination among organisations/departments, conflicting priorities of organisations, old structure and processes, lack of e-service applications, lack

of partner readiness and cooperation difficulty in the re-engineering of internal processes (Gottschalk, 2009; Chen et al., 2009; Schuppan, 2009).

The findings of this research are consistent with those of literature in some of the factors. The identified administrative barriers, based on the research evidence, include the complicated procedures needed for introducing the new e-services, and the inability of the governmental back offices to handle the e-services transactions.

The minister Deputy explained:

> "Sometimes, there is no agreement about the general administrative processes or data definitions among government ministries and even among departments in the same organisation. The administrative problems are also complicated due to inaccuracy of data, lack of skilled staff, and issues regarding the interpretations of the rules regulating the data interchange between different organisations."

Also, absent strategy is one of the administrative barriers found in some governmental organisations in Egypt. The literature regarded the lost strategy as a barrier that obstructs managing the change resulting from introducing the e-service initiative (Andersen, 2009; Heeks and Santos, 2009). Also, based on the findings, some administrative barriers, such as red tape, also existed during the projects' implementation and played a role in slowing down the implementation process. This finding was also confirmed by a study conducted by Gil-García and Pardo (2005).

The lack of cooperation and interaction between governmental organisations has been identified as a barrier to e-service project development in literature (Al-Sebie and Irani, 2005; Brown and Brudney, 2003). According to the research findings, this barrier is evident in hindering the progress of the e-service projects in the Egyptian government. This inactive coordination is due to the different priorities of organisations or the lack of a mechanism for interaction.

More reasons for this problem were explained by the National Databases Program Director as he said:

> "The lack of interaction among organisations and ministries plays a role as a barrier since each ministry is run differently and each one has its own policies, its own data collection methods, its own processes and its own definition of certain terms, e.g. the definition of budget may differ from one entity to another in terms of what is to be included within it. In order for these ministries to collaborate and communicate, harmonisation of the policies, of the methods, of the definitions is necessary; the problem is that each ministry has become accustomed to the way they handle things and refuses to cooperate or make changes."

The same problem is explained by the Minister advisor for strategic projects:

> "I see one major problem in Egypt, which is the lack of unified information definition. Some concepts' definitions are very subjective and they have different meanings and uses in different ministries. We are also lacking a unified policy. To overcome this problem, there must be a CIO (Chief Information Officer) in each governmental organisation to ensure the unified policy across the country is implemented in each organisation and every employee in this organisation is working on track with that policy. All CIOs must be under the command of the Minister of MSAD in something called a CIO council to share the same ideas and agree on the broad lines of the policies."

Finally, some officials think on a strategic not an operational level. All the data used to aid the strategic information are obtained from low-level management.

The Minister of State for Administrative development also confirmed this issue. He added:

> "If you automate the low level management properly, these data will automatically feed into the system. Unfortunately, some officials see that this is too much of an effort and takes too many years to be done. This is an example of an attitude of no willingness to improvements. Also, many governmental organisations fail to realise the significance of organisational alignment and the significance and benefits that may result as a response to encompassing the

> use of information technology in their internal strategies. Many organisations have conflict objectives and priorities. Thus with such a perception many ministries are unwilling to share experiences or cooperate."

Despite the previous similarities between the research findings and the prior studies in literature, this research revealed more emphasis on the cultural issues of e-government transformation in Egypt, than any other issue emphasised by these studies. Findings show the Egyptian e-government transformation concerns focus more on cultural than administrative, political, and legislative barriers. Although these groups of barriers exist to different degrees, it is expected that due to the social and cultural problem roots, the e-government development and transformation in Egypt will be a complicated and time consuming challenge and require long-term solutions.

The cultural issues are mentioned to be significant according to many scholars (Evans and Yen, 2005; AFFIRM, 2002; Schedler and Scharf, 2001). However, in the Egyptian context, all interviewees considered the cultural issues as the biggest barriers for ideal e-service projects implementation.

A project manager in the Institutional Development Program explained:

> "When the system changes, the employees have to abandon their current way of doing things to accommodate the new system. They are not accustomed to the new way of doing the work. They are afraid of the new system. We noticed that young employees are glad of the new system, but old ones are not. They do not want to learn something new and which they are afraid of."

Similarly to those of some scholars (Pina et al., 2010; Andersen, 2009; Bhuiyan, 2010; Prattipati, 2003), the findings indicated that the old bureaucratic system encouraged corruption in many organisations in Egyptian government. As a result, over the years, Egypt has consistently gained poor scores on the corruption perception index (CPI). A 2010 Global Country Report on the state of corruption launched by Transparency International ranks the country 98th among 178 countries with a CPI of 3.1 (Transparency International, 2010).

A Ministry of State for Administrative Development consultant and spokesman agrees with this problem and he offered some solutions, as he said:

> "There is no doubt that e-service projects implementations are important inputs and necessary to achieve the e-government program objectives by blocking ports of corruption based on the direct interaction between the citizen and the employee, as it provides a faster service and avoids the complexities of red tape that consume time and effort, not to mention ensuring a fair response to citizens' requests. Also e-government principles lead to the disappearance of intermediaries who want an illegitimate income to provide the service. Therefore eliminating this category would lead to a reduction in the cost of obtaining the service, limiting payments to the actual charges for providing the services."

Corruption is not the only reason for employees' resistance to change as confirmed by (Evans and Yen, 2005). According to the research findings, sometimes government employees in different management levels do not understand the benefits of the new procedures to implement e-service projects. This leads to both intentional and unintentional interruption of the projects.

The vice-president of the Egyptian State Council and legal advisor of the Minister of Administrative Development added:

> "Besides the existence of some corrupt employees who have some interests in keeping the current system without change, and benefiting from the undisciplined situation, there are other reasons. For example, some managers are not really keen on change. They are indifferent about applying new systems to their work cycles. They are not aware of the advantages of the change. And if the managers are not really enthusiastic about any projects, there is the probability of project failure. So we have to work a little bit on this part to increase the number of official employees who see the benefits of the system."

Finally, citizens' culture is highlighted and stressed by many scholars (e.g. Vassilakis et al., 2005; Chalhoub, 2010; Chan and Pan, 2008; Hung et al., 2009; Butler and Collins, 1995). The literature discussed some citizen issues such as the citizen's confidence in the government organisation and/or employees, the citizen's trust in the government's manual and information

technology (IT) system security, and the citizen's belief in the organisation's back office processes. All these issue are evident in the Egyptian government context. According to senior officials, Egyptian citizens have a lack of trust in government processes. Also, they have negative views on using IT tools in general and the Internet in particular for conducting government services.

The Government Services Development Program director commented on these issues and talked about considerable solutions. He said:

> "We have to work on the end-user culture. We targeted some mandated electronic services to the young population segment (for example, university enrolment service). The reason for this is to create the desire to use other electronic services and in time cover a large segment of the population. Also, these young people may use the electronic service for their families, which would increase the e-use of the services and increase awareness as well. Another part of our problems in developing the e-service projects is the culture of handling and exchanging data among organisations. This problem needs mandatory decisions from upper level leaders."

Findings from the literature draw great attention to political factors as barriers to initiate and maintain e-government projects. These factors include the weak political officers' commitment and their insufficient support to develop e-government programs. The barriers also include top level management's little awareness of the projects' importance and a lack of clear vision, strategy, and detailed policy (Norris and Moon, 2005; Moon, 2002; Heeks, 2004; Sharma and Gupta, 2003; Bhuiyan, 2010; Lau et al., 2008; Altameem et al., 2007).

The findings of this research were different than the literature findings when it came to the Egyptian-specific context. These political barriers do not seem evident in any of the e-service projects investigated in the Egyptian government. The Egyptian political leaders had no problems supporting and committing to the introduction of e-service projects under the e-government program umbrella. The decision taken at the top level of government administration appeared to be about great and important enablers for the success of the e-service project. They are well informed of the values of the e-service projects and they engage

positively with them. This engagement and commitment is represented by devoting financial resources, forcing inter-agency coordination, changing policies, devoting human efforts to develop and implement the e-service projects, and providing time, effort, and the political, economic, social and technological climate, all of which contribute to the launch of workforce capacity and creativity.

The executive coordinator of one of the projects considered the political factors identified in the Egyptian government context as the most important enablers rather than barriers to the development of the e-service projects, as he mentioned:

> "One of the most important enablers is the political wish. For example, the minister of MSAD gave a decision that all the public service centres' automation will be finished by 2012 for all cities, towns and villages in Egypt. In addition, by that time, the 200 services supposed to be automated should be done. There is an obligation and there is no time for resistance or wasting time. Also don't forget that the Minister was the e-government consultant in the Ministry of Communication and Information Technology before he became the Minister for Administrative Development. So he adopted and actually started this project before the MSAD was formed. This support is a very important driver for the success of the e-government. The commitment and the belief in it lead to the accomplishment of the objectives. Even with the busy schedules of the organisation's top-level managers' or even ministers, they always try to find some time to discuss the upcoming projects in their organisations and ministries and give appropriate support. The Prime Minister gave the MSAD his full support to be able to implement all the projects related to e-government."

The only similarity between the findings of the literature and those of this research, with regard to the political barriers, is the future fear that this political shield supporting the e-government projects diminishes. Unfortunately, the political shield supporting the e-government projects diminished with the resign of the whole government after the Egyptian revolution in January 2011. The e-service projects were no longer the top priorities of the new government and most of the resources were dedicated to new basic strategic projects. Even the

ministry responsible for the program (MSAD) was cancelled at first and was merged with the Central Agency for Organisation and Administration. This put all the e-government projects implementation at risk, wasting millions of Egyptian pounds, until a new decision from the new Cabinet to appoint a new minister to MSAD in late March 2011. Then all the projects resumed with new political support.

Many literatures stressed many barriers related to a lack of appropriate laws, regulations, directives that assist the implementation of e-services projects (Vassilakis et al., 2005; Gottschalk, 2009; Basu, 2004; AlShihi, 2006; Bélanger and Hiller, 2006). Examples of these include laws concerned about privacy protection and the security of personal data (Gottschalk, 2009). Also, scholars highlighted issues such as the lack of a suitable framework that addresses the submission of electronic documents, liability emerging from electronic documents, and the proofing value of electronic documents against paper documents.

According to research findings, some legislations stand in the way of the e-service projects' implementation as laws are difficult to change and it also takes many years to change a law or to issue a new one. It takes too long for the new law to be thoroughly examined, its executive regulations made ready and then be presented to the people's council and gain approval.

Head of the e-signature, Certificate Authority licensing at the Information Technology Industry Development Agency (ITIDA) explained:

> "When the e-government program started, there was a need to change and create some legislations. For example, the consumer rights laws, privacy and computer crime laws, the laws regarding the physical presence of the citizen, and the adoption of an electronic signature or authoritative electronic correspondence needs to be addressed. There was an absence of a legal framework governing the process of verification of identity through the Internet. During the transformation, the law took four years to be approved and it took six years to construct the Root Certificate Authority (Root CA) which has the authority to issue digital certificates to subordinate Certificate service providers."

But the problem exceeds the issuance of new laws. Some identified problems dealing with an existing law. An example of this problem is e-payment. The legal advisor at the Information Decision Support Centre (IDSC) commented:

> "The problem of the electronic payment law is certainly serious. It is a problem concerned with the Ministry of Finance. The ministry is not very active in allowing the use of electronic payment in the governmental services. Although the decision has been made for electronic payment, the regulatory standards are not specified yet. Therefore, the decision is not active."

Finally, attaining legal interoperability is quite a big challenge, especially as decentralisation in Egypt has led each governmental entity to create its own policies and regulations that are incompatible with one another and that in turn inhibits the interoperation of the entities.

To summarise, identifying all necessary legislative changes in the Egyptian government cannot be anticipated and addressed before the start of the e-service project. The introduction of new legislations is a long process that requires extensive evaluation and assessment. Such lengthy processes may slow down implementation. However, such a barrier could be overcome by Cabinet decisions which are easier and quicker to be taken or altered.

The literature discussed two kinds of resource factors, human resources and financial resources. Human factors include the skilled qualified personnel at technical and management levels, professional expertise, and e-government experience. Financial factors refer to different issues: a sufficient budget for "e" initiatives and projects, economic conditions such as poverty and financial crisis, and cost factors such as cost of providing services through multiple channels, service user cost, and technology set-up cost. Most of the senior officials confirmed that the necessary financial resources are available, and there is no serious concern about them in the Egyptian government. On the other hand, funding – according to their opinion – is considered a great enabler, especially with the presence of the re-investment model offered by the international companies that have agreements with the Egyptian government

> "There are no budgetary or financial problems at all. As soon as the MSAD is convinced by the project and has got the appropriate approval, a budget is assigned to it. And if there is no budget for it, a special request is sent to the Cabinet to assign a budget. These requests are usually approved. But the projects are arranged according to their priorities."

However, a few interviewees mentioned some instances where insufficient funds represented a threat to and interruption of some e-service projects' implementation. The manager of the family card system project emphasised that funding for some of the project was not sufficient so that its progress was interrupted:

> "We wanted to start working in other governorates in parallel with the provision of the subsidised food commodities; we found the budgets of the pensions were not available so the project stops accordingly. The budgetary problems existed and we suffered from them and they caused some delay in some services projects. When we ask for a budget from the ministry of finance, they tend to be lazy in approving the budget right away. And they don't provide the project the assigned budget all at once. Instead they pay it in instalments and some of these instalments get delayed resulting in the interruption of the project progress."

For this reason, another project manager in MSAD stressed the wise distribution of such a budget:

> "In the case of scarcity of resources, a budget should be directed to any effort needed for the establishment of e-government in some selective areas that have a high chance of success, and provide beneficial government services to the citizens, to avoid increased frustration of citizens about the burden on their economic resources."

Concerning human resources, as mentioned before, Egypt as a developing country has difficult economic conditions and weak human assets. There is a lack of internal knowledge and skill to develop suitable and effective policies for establishing and developing strategic e-government service projects. For this reason, Egypt is still unfortunately dependent on imported technologies and

expertise. A project manager considers this to be the most challenging barrier he encountered during project implementation:

> "The most challenging barrier I have personally encountered was the lack of ICT skills among employees. We needed to depend on highly skilled, young, well-educated staff as a starting point for the project development towards the transformation to an electronic service provider."

Funding factors are still challenging for the future of the e-government service projects in Egypt. Given the large number of projects in all the ministries and related organisations, financial and human resources represent key factors for the failure or success of Egyptian e-government programs.

As previously mentioned in chapter one, the primary purpose of this research is to identify the factors affecting the development and implementation of e-service projects in the Egyptian e-government program. Therefore, in the next section the key findings of this study derived from the research evidence are also discussed against the research purpose and objectives.

9.3 Discussion of the Research Objectives

In this section, the researcher summarises the key findings of this study derived from the research evidence against the research purpose and objectives.

Objective 1: Investigate the e-service projects that have been implemented by the Egyptian government.

This objective has been achieved through studying four major projects from different governmental ministries in Egypt. These projects are proven to play important roles in providing e-services to the public through using IT applications. The number of beneficiaries and service recipients from these projects are huge and constitute a large number of the country's population. This indicates the potential importance of the provision of e-services through these projects. Finally, the services provided by the ministries chosen in general, and the projects in particular, are of crucial importance to the public.

The four case projects have been investigated and described. This description began by explaining the situation before the implementation of these projects. Then, the key benefits resulting from the projects were identified. The stakeholders of each project, who proposed them and who implemented them are also specified along with a detailed explanation of how and when the projects were implemented. This was done by specifying the strategies used in the implementation, the key development, implementation steps and chronology, the main obstacles encountered during the implementation and how they were overcome, and finally the resources used for these projects. The description of the projects was concluded with an explanation of how they can be sustained and transferred.

The outcomes of the data analysis indicate that the core idea behind these projects is to provide new and better e-services that benefit a large segment of the Egyptian population. These services will lead to greater flexibility and comfort which in turn increases citizens' satisfaction, saves time, and also reduces the costs of providing the service, which produces savings for both the government and the public. This is assessed through receiving feedback from citizens via government call centres (19468 or 19GOV) and government ports agents (offices in places near residential communities). The general reason for taking the initiative for these projects is to increase the government performance and creating a unified system capable of improving the delivery of services, increasing efficiency and providing high-quality service delivery.

To conclude, the projects have a notable effect on many aspects. First, the public in Egypt are now much more open to more e-government services (compared to how they before). The Public Sector Engagement Manager at Microsoft confirmed:

> "The public awareness level increases with time. Five years ago, there was not anybody absolutely aware of e-services. Now, awareness has slightly increased as a result of word of mouth. Also awareness has increased through outsourcing marketing to the mobile network companies. They have succeeded in marketing their provision of governmental electronic services through their

network. Several other ways have contributed to public openness to electronic government services, these include holding seminars in universities, printing relevant information and the government website on tickets, documents and brochures that people use normally, and word of mouth from government employees to citizens when they come to receive the service through the traditional way."

Second, implementation of the projects and provision of the services have played a role in building trust between government and citizens. They have also provided a good example of the cooperation between the public and private sector for better serving the public and reducing the government expenses so the money can be used in other sectors. They have also highlighted the importance of completing national databases and connecting them to each other and providing useful applications for the citizen, which has an impact on the ease of his life. The projects stress the need to start with a pilot project to prove the success of the initiative, even if on a smaller scale, to discover problems, rectify them and create a win-win case with all stakeholders.

Objective 2: Determine the problems and barriers that have been encountered in the development and implementation of these projects.

From the research evidence, the researcher has identified the groups of barriers that face Egyptian e-government progress from the evidence obtained from the senior officials' interviews and illustrated using the models in the NVivo software. The research results have found that the cultural barriers group is the most important in the Egyptian case. Different cultural difficulties start before the commencement of any e-service project and put the whole initiative at risk. The first in the cultural barrier is the resistance to change from both service provider and recipient as neither is used to electronic types of interactions. Also they feel there is no need for what is already supplied by the government. The program provides more than 600 e-services dedicated only to citizens but these services are met by very low demand from them. Surprisingly, this issue is desirable from the point of view of some high level officials.

Also, this research has revealed that the government is not exerting appropriate efforts to increase the demand and awareness of the e-services among citizens. Government officials prefer not to talk about projects before they actually happen, they then simply let the services speak for themselves. They also prefer to use the entire budget for implementing new projects rather than in awareness campaigns.

Nevertheless, there is a need for these and other projects to continue. The current low demand rate does not mean that it will not be higher in the future. The Egyptian government acts as proactive rather than being reactive. It is prepared for the demand in advance. The government lays the foundation of the new projects much earlier than the arrival of the citizens who will use the services. Recent estimates indicate that 12% of the population are Internet users, most of which are aged between 15 and 25. The most important websites visited by this group are shopping sites, chat rooms, social networks, news, and academic studies, but not the government services. However, in five years' time, they will be among the first users of these e-government services. When they have the need for a government service, the first place they will look for it is via the Internet. In addition, the government tries to enhance the services that are currently and classically provided through offices, call centres, mobile phones, and service providers. At the same time, demand can be created by marketing to citizens the e-services provided through the Internet.

Besides the cultural barriers, the research results provide evidence that there was an inability of the governmental back offices to handle the e-services transactions and e-government as a whole. There were no channels in the governmental organisations to handle e-services. Some organisations had no channels handled by computer in the first place and some services were very complex and required the cooperation of three or four organisations at least. So the operations to handle these kinds of services were not very easy to manage because the ministries were operating separately. Although the political commitment to the e-government program existed, implementation of the

related e-service projects was another issue. There was a lack of coordination among different ministries because they have different priorities.

Also, there are some organisations that have been working for 30 years and lost the main strategy to which they were working – employees have lost the mission they were originally working for. Hence, application of the new systems is very difficult in this situation. Also, the administrative barriers continue during the e-service projects implementation as red tape slows down the process.

The resources barriers according to this research are limited to the small budget and the high operational costs for some of the projects. Concerning human resources, there are no technical staff capable of running, operating and maintaining the new systems, so projects had a real shortage of skilled persons and the rest of the employees need training. This barrier is still a challenge for the near future. MSAD still has a shortage of employees. Given it has projects in all the ministries and related organisations, the projects managers are still very few. The problem is that the ministry has long procedures for new appointments, not because of bureaucracy, but because of the presence of many measures to assure the qualifications of the person.

Technological barriers in this research context are related to the digital aspect. This barrier does not interfere with the project implementation but does affect the attainment of its objectives. Those without access cannot learn essential computer skills, cannot access information that can provide economic opportunities, and cannot share in the benefits of e-government. As a future challenge too, the technological challenges hinder the majority of the population from benefiting from the e-government projects. In addition to the low penetration of the Internet, and the digital divide mentioned earlier, there is low penetration of PC and computer literacy. Additionally, the challenge lies in the constant need to upgrade security settings, encryption keys and algorithms. Interoperability and multiple service delivery channels for future projects are also challenges from a technical perspective, as the information systems have to be integrated with numerous other organisations.

Finally, concerning the legislations, in Egypt it is very difficult to change laws; it takes many years to change a law or to issue a new one. It takes long time for a new law to be thoroughly examined, for its executive regulations to be ready and presented to the people's council and to receive approval.

Objective 3: Identify factors that assist the government to develop and implement e-service projects.

According to research results, the political will and support is the ultimate driving force for the successful implementation of e-service projects in particular and the e-government program in Egypt in general. The existence of an entire ministry responsible only for the e-government program is convincing evidence of such political support. This factor helped in overcoming many barriers that were encountered in the implementation of the projects, such as resistance from some governmental employees and budgetary problems.

At a certain point in time, when the e-services are believed to be most reliable, one important factor that will increase the success of the project is closing down the traditional way of providing the services through the government offices and force the demand to exist only through electronic channels, like what happened in the university enrolment project. This enabler is not related to a certain segment of population who are aware of the importance of the Internet. This is applied to all citizens because when the government forces the things to happen, people find a solution, either by trying the services themselves or through intermediaries. However, the government is not taking full advantage of this important enabler as it is not pushing people towards the use of e-services in many projects while it can.

Partnerships with the private sector are indicated by the research results as important and significant enablers. For example, the partnership with Microsoft provided sufficient funding for the projects, which is certainly considered as an incentive, especially when these projects could have been cancelled because of having major cost increases.

The e-government program in Egypt has proved to acquire a strong managerial and political leadership that provides time, effort, money, resources and the political, economic, social and technological climate. It is fortunate that Egyptian political leaders are fully aware of the importance of the technology role in today's life. Therefore, they know the importance of these kinds of projects. So they listen to any complaints wholeheartedly and discuss ways for overcoming any barriers in the way of the projects' implementation.

Leadership is confirmed as a very strong enabler that is essential for the success of the transition to e-government. This is true in terms of the guaranteed long-term commitment steps and stages of the project, and the provision of government and public support to this project at all levels. Therefore, officials with culture and knowledge of the transformation to the new system are a necessity to the attainment of the real objectives and fruitful results associated with this work.

A clear vision for the initiative from the beginning acts as a driving factor. The Egyptian government commitment to deliver high quality government services to the public where they are living and in the format that suits them was the idea behind the development of the projects. It has been perceived that vision is one of the most important factors that should be considered before any e-government project sets off. A shift to e-government requires profound, clear and mutual vision by government leaders, parties, the private sector, civil institutions and citizens who expect to benefit from this transformation. In addition, it is essential for this vision be formulated through cooperation between these parties to ensure its success.

The final enabler emphasised by all the participants is the strategies used to implement the projects. The selection of strategies used affects to a great extent the success or failure of the projects. The reason is that the strategy is based on comprehending current reality and its problems, so this transition does not lead to the transmission of existing problems to the new electronic environment. This strategy must create standard specifications for everyone to follow as the project is implemented.

Objective 4: Determine the means by which the Egyptian government can overcome the barriers that hinder e-services projects.

The researcher has explained, according to the research evidence, some recommendations to solve the predicted up-coming problems. Those solutions have been clustered to match the barriers groups.

To overcome the resistance to adopt change, there have to be different incentives provided to public servants. This could convince them to promote change and prepare them to become good change agents. Also, changing the government work culture, promoting transparency as well as transforming attitudes into becoming more customer-service oriented, are essential.

Theoretical and short-course training are necessary solutions. The need for extensive training is to make the employees comfortable with the new automated systems. This will also help to overcome the fears of the employees of being replaced by younger, computer literate employees. As a result, the fear from dealing with technology as a threat to employees will be removed, the human resources skills needed for the sustainability of the projects will increase, and corruption within government agencies resulting from lack of monitoring and accountability methods associated with traditional, paper-based environment will be terminated. Awareness sessions and workshops could be held along with the required training to members of different managerial levels (to guarantee their support) and employees (for support and implementation).

Strategic partnerships can be utilised to overcome the interoperability challenges, multiple service delivery channels, and the challenge of integrating information systems with other agencies. They can play the role of technical consultants for the project, and set interoperability and multi-model standards for the local development partners, in order to ensure smooth future operation. They could also provide sufficient funding for the projects, which is certainly considered as an incentive, especially when the government budgets for some projects is significantly low.

Ensuring a common and clear vision is a vital solution to overcome the challenge of the existence of a large number of stakeholders involved in the project. Also, building a sense of ownership within all relevant stakeholders can be of possible help. Strengthening co-ordination, improving collaboration, as well as providing leadership at many levels can ensure commitment and follow-up on all activities of the project.

The Egyptian approach of “we want to do something, let us do it and learn from our mistakes meanwhile, and there will be a second version which will come anyway” is successful. Things change all the time and the lifetime of any service or any new model is often very short. Basically, technology changes, user requirements change, user expectations increase and the competition plays a role. This can be – if not a solution – a technique for overcoming many barriers and a way for proceeding in e-service projects’ implementation.

Objective 5: Develop and validate a framework for e-service that can be implemented by Egyptian government organisations.

Based on the research evidence, the researcher has developed a framework for explaining the main barriers and enablers for e-government development in Egypt. The purpose of the developing the framework is to increase the chance of success of the e-service projects. This is achieved by facilitating a better understanding, for the e-government developers and implementers, of the nature of the e-service development process, particularly by identifying barriers, success factors and the phases through which the projects are going. The framework organises and integrates the various elements of an e-service development in a simple and consistent way, assuring attainment of the pursued outcomes in the final phase. The framework considers the e-service development process as a transformation from the traditional rigid context – which is the current state in many developing countries – to a full public e-service environment (desired end state) emphasising a citizen-centric focus and digitalisation.

The development of the framework passed through different stages. Before the actual collection of data, an initial framework had been developed and built based on many sources. The first source was the prior literature in the area of e-service development in government organisations, the second was the efforts being undertaken in developing countries, which are at a basic stage of their progress, and the final source was the two pilot surveys conducted before the main stage of primary data collection.

After conducting the interviews, the framework had been modified according to the new data collected and their analysis. Some of the barrier groups remained persistent throughout the process of developing, introducing and implementing the electronic service, while others disappeared in the Egyptian e-government context. Other groups of barriers came out as either future challenges that might happen, or past problems that have been taken care of. The same applies to the enablers that facilitated the development of the e-services.

9.4 Key Research Contributions

This research attempts to add key contributions to knowledge by focusing on Egypt-specific factors affecting e-service development. The research conducted case studies from the Egyptian e-service projects to identify the different groups of factors that might hinder the development of e-service projects in the Egyptian government. This is believed to help Egypt and any other developing country in planning and implementing e-service projects. Specifically the research makes the following contributions:

- One of the early studies to explore the impact of the Egyptian national conditions and Egypt-related factors (obstacles and enablers) on e-service development within government.

- Provides assistance to the Egyptian government with a tailor-made framework appropriate for e-service initiatives and development in Egypt. This framework adds contributions at two stages. At the conceptual stage, it defines and classifies all the barriers and enablers of the e-

service development and implementations based on both literature and empirical data. At the practical stage, the framework can be used as a tool for decision-making for successful e-service projects' development and implementation in Egypt.

The findings of this study are also of great importance to various groups such as:

- Government officials: and decision makers who are directly or indirectly responsible for e-service development in Egypt. They play a vital role in meeting the challenges the country faces when moving from a traditional bureaucratic system to a seamless e-system. The study is directed to meet the purposes of this group as the proposed framework can be used as a mechanism for decision-making by defining obstacles to e-service development, proposing solutions, and illustrating driving forces leading to the e-service projects' success.

- Academic researchers interested in examining the e-service area: the research focuses on the groups of factors affecting e-service development. Researchers can examine in depth each group independently and their effects on different contexts. Moreover, more research could be done in the same area and with the same methodology while concentrating on the projects dedicated to the business (G2B projects) or other governmental organisations (G2G projects) instead of only the G2C projects covered in this research.

- Private sector companies: especially those which aspire to have partnerships with the government to develop e-service projects dedicated to citizens. In addition, the framework can provide a foundation for e-service development in the private sector, by describing the critical requirements to ensure successful development.

Concerning the research outcomes, the research produced the following:

- A framework for e-service development and implementation in the Egyptian government.
- A detailed analysis of some of the main e-service projects implemented in the Egyptian e-government program.
- Lessons learned from the implementations of such projects.
- A detailed list of barriers classified into groups, to the development of e-service projects especially in the Egyptian government context and proposed solutions to them.
- A list of driving factors facilitating the development and implementation of these projects.
- A novel factor that have not been mentioned in the literature which is the enforcement of decision, which make the e-service compulsory to citizens

In addition, this research has filled the gaps identified in Chapter 2 as follows:

Theoretical contribution:

The research has proposed a framework for different challenges that are faced when attempting to implement e-service projects. In addition, it has explained some successful e-service projects' development according to senior officials who are involved in e-government programs. The framework also explained the different enablers that facilitated the development and implementation of these e-service projects. Both barriers and enablers were investigated, analysed and synthesised into groups. They were also distributed among the different phases starting from the projects' pre-development phase, then the transformation phase and the seamless e-government phase. Finally, the research has contributed with explanations of the solutions for how to overcome the barriers encountered during the different phases of e-service projects' implementation.

Empirical contribution:

The research used a qualitative approach to examine the factors affecting the e-service development and implementation. Also, it has adopted in-depth case studies for the purpose of investigating the factors affecting e-service projects' implementation. The research contributed empirically through using interview techniques to explore the opinions of the senior officials responsible for the development and implementation of e-service projects in the government context. The research adds to the interpretive studies that attempt to understand and interpret how the e-service phenomenon is explained and given meaning subjectively by its relevant stakeholders.

Contextual contribution:

This research is a new qualitative study that examined the factors affecting the e-service development and implementation in the Egyptian government context. Hence, it satisfied the need for a research to investigate how Egypt in particular can plan, implement and provide successful e-services projects, overcome the barriers and avoid project failure. The research also adds a contextual contribution as its findings can be generalised to all e-service projects in the Egyptian government context.

Substantive contribution:

This research will enable senior officials to understand how they can best develop and implement e-service projects in their governmental organisations. Hence, they can avoid the failures of their e-service initiatives and the huge direct and indirect costs accompanying such failures. The research provides an empirically tested framework that examined the factors affecting the e-service development and implementation in the Egyptian government context. Also, the research investigated how e-service projects in Egypt could be planned, implemented and become successful by overcoming the barriers and emphasising enablers.

9.5 Implications for Theory and Practice

9.5.1 Implications for theory

This thesis has several implications by confirming and extending e-government service theory in several ways. One is by making a distinction between the factors (barriers and enablers) that are involved in the development and implementation of e-service projects, the research extends current theory by demonstrating the effect of these factors on the government processes.

In order to take full advantage of e-government, the thesis has highlighted some important factors that should be incorporated into the process of decision-making when the government is considering implementing projects for the benefit of its citizens. One of the key implications for this study is that researchers should lay the foundations for the new idea before they actually happen in reality. This research highlights the necessity to continuously investigate the factors that could affect the projects over time. It would be important to examine in detail the relevant factors of e-service projects' implementation in government.

The framework in this research provides new ways through which e-government implementation can be studied by researchers, and fills some important gaps in the area of e-government. First, it provides a precise framework and suggestions to implement successful e-government projects in the Egyptian context. This is done by identifying the different groups of barriers that are encountered when implementing e-service projects. The framework also explains the different groups of enablers that facilitated the development and implementation throughout the different phases of the e-service projects. Second, the framework guides researchers to more e-government studies that can be conducted in countries with similar characteristics.

The research implies that although the area of e-government has been in the centre of researchers' attention for more than a decade, it still needs much more research. Studies in the area are insufficient, especially in Egypt. Also, the

research has made implications about several areas associated with the Egyptian government's projects such as sustainability and transferability.

Another important implication highlighted by the research is that the government should enable all citizens to have easy and affordable access to the potential offered by the e-service projects. Developing an appropriate communication infrastructure is a requirement for achieving this access. Technology should be considered as a means for increasing awareness and for upgrading the skills and productivity of citizens.

This research implies the importance of promoting the use of technology to motivate citizens to understand and be comfortable with the use of e-services on a daily basis. In addition, the application of technology in the government context is assumed to offer a better quality service to citizens and a well-organised work environment for government employees, as they were used in the projects studied in this research in reaching remote populations and providing continuous training for public employees.

The e-service projects in Egypt are understood and described in this research as being able to deliver quality government services to citizens wherever they are and in a format that suits them. The goal of these projects is to achieve a high level of convenience in government services, provide citizens with the opportunity to participate in the decision making process, and enhance efficiency and quality of services.

9.5.2 Implications for practice

As previously mentioned, the findings of this research provide implications for different groups including public and private sectors. However, the main aim of this research is to provide implications to the Egyptian government to assist in the development and implementation of successful e-service projects.

One of the important implications for the decision makers in the Egyptian government is to make use of the "decision enforcement enabler", i.e. to make the use of many e-services obligatory through the electronic channels as

happened in the university enrolment project which is considered to be the most successful project among the four cases studied in this thesis. For example, the Ministry of Finance could benefit from the same experience in applying for taxes. Also the Doctors Charging Process which takes place every year can use the exact same procedure for distributing the newly graduated doctors, chemists and dentists to hospitals in the governorates within the whole country.

The research also highlights the importance of spreading awareness among the targeted users. For this reason, the government should consider having some campaigns in universities among the young age range. They are considered potential first line users of e-government services in a few years' time.

The most important concern which the government should work on is the horizontal spread. This mechanism should be spread across Egypt. The decision makers should move from the vertical model as it is enough to take samples and have pilot projects. The service should be spread all over governmental organisations within Egypt. However, the government should go country-wise when implementing the e-service projects and when they are able to do all the services on the Internet, not selectively.

In the same context as the government spreading services, they should also penetrate market segments. The low level of people in the poorest villages in Egypt should find a way to use the e-services, even with the help of a mediator. This may even create job opportunities. Young people who are computer and IT literate can serve their villages by having their own private business with a licence from the government as a mediator. This is a very successful business model which has been applied and succeeded in India.

Also the most important step this research has stressed is the activation of the e-signature service. This step is very important to Egypt. Foreign investors watch the country ranking among others. This ranking is determined by several factors, among which is the time required to form a company (which will be significantly reduced when activating e-signature services). This will subsequently enhance Egypt's ranking in attracting investments.

Social considerations of the government project should be considered prior to technical aspects. Citizen considerations and requirements should be taken into account from the start before planning and implementation phases. Capacity building of different stakeholders is also crucial to the success of the initiative. Finally, considerable effort is required to change the citizen culture to use new technologies for service delivery.

9.6 Research Limitations

The main limitations of this research are related to the qualitative approach and the case study method. One of the major issues is associated with the replicability of the obtained results, which cannot be achieved easily in qualitative research, and the little basis for scientific generalisation that case studies provide. The researcher tried to overcome this limitation by adapting multiple case studies with the aim of analytical generalisation.

Another limitations encountered by the researcher is the time limitation. All the interviews had to be done within a time period of less than three months, which was the maximum time allowed by the researcher's sponsor. Also, the researcher had to travel back to Egypt and set up meetings with top management officials who had very tight schedules. To overcome this limitation, the researcher tried to set up preliminary arrangements with some of the particular interviewees with the help of some known academics and colleagues before travelling.

Also due time limitations, the total number of projects that were studied in this research was four. The researcher considered this as another limitation as it more cases would be needed to improve the generalisability of the findings.

The research findings and proposed e-service framework are applicable in assisting the development and implementation of complex e-service projects within the Egyptian government context. There is a potential for the findings of this research to be applied to other developing countries' governments whose economic, political and cultural factors are similar to those in Egypt. However,

case studies were only undertaken in the government to citizen domain (G2C). Consequently, similar results have not been achieved and a safe claim cannot be made regarding the research findings' generalisability in other domains (G2B, G2E, or G2G). Until this occurs, the boundaries for the applicability of the framework are set around the G2C domain.

Concerning the validation process, it had be done via teleconferencing because it was too difficult for the researcher to travel again to conduct face to face interviews and conduct validation sessions. However, arranging the teleconference meetings was a little easier than arranging those for collecting the primary data. This was due to the fact that the researcher became known to the participants after the first interviews and accordingly, the first participants facilitated the arrangements of validation meetings with the new participants.

The first attempt to reveal the barriers in the studied projects was by interviewing a group of employees working at the implementation level of these projects. This group tended to answer questions about the barriers and problems in their project with "negative" answers. The reason was that some respondents did not want to show the problems encountered in their projects, which could have jeopardised the reliability of the research findings if they had been built as a result of these answers. To overcome such limitations, formal permission to conduct interviews was obtained and other meetings re-arranged with the members of the executive level within each project.

9.7 Recommendations for Future Research

There are some potential researches for future work that would be helpful:

- Studying cases from the e-service projects that have failed or did not achieve all of their intended benefits, to determine the reasons for their failures. This could be done in a different context or in different countries and could lead to improving the level of success of future e-service projects, particularly within the government sector.

- As this research focuses on the groups of factors affecting e-service development, future research could examine in depth each group independently and their effects on different contexts. Moreover, more research could be carried out in the same area and with the same methodology while concentrating on the projects dedicated to the business (G2B projects) or other governmental organisations (G2G projects) instead of only G2C projects.

- All the projects studied in this research are dedicated to citizens, although the investigated factors are identified from government officials' perspectives. Although government officials are major stakeholders in the e-service development process, the research in this context could be extended by identifying the factors affecting the use of e-services from other citizens' viewpoints. Also the approach in this case would be different as it would depend on quantitative techniques within the use of questionnaire-based surveys. The citizens' views, as major stakeholders, could be incorporated in the planning, design, implementation, and evaluation of the e-service projects process. This could also have an important impact by increasing the effectiveness of the e-government program and increasing the usage rate of e-services through the new channels. It could also provide the decision makers in the government with some indicators of the type of projects needed and favoured by the beneficiaries.

- The proposed framework in this research could be the basis for future research within the Egyptian context. Research could investigate the existence of factors according to the geographical areas across the country (the classification could be based according to governorates for example). Such research could help to indicate the persistent problems in specific areas (remote areas, or poor villages for example) and also indicate the aspects that need extra effort to enhance the usage of e-services.

- Future research could be of comparative nature. The identified factors could be matched to their counterparts in other developing countries to investigate

the similarities and differences. The same comparative research could be applied to countries with different natures (developing versus developed countries for example).

9.8 Chapter Summary

Implementing e-service projects requires a unique framework for each country that fits its environment. Therefore, in this research, a suitable framework has been developed for the Egyptian government context. This framework was validated using different approaches and investigated the different factors that affect the development and implementation of several e-service projects.

The findings of the research have revealed that the main concerns for implementing the e-service projects were cultural concerns and the way to overcome them. In general, this group was the most challenging obstacle as it starts during the planning, and before the commencement of the projects and continues after their completion. Political support and decision enforcement are the most important among the enablers that facilitate the successful implementation of the projects. The researcher has obtained important suggestions related to the identified factors which can solve some of the persistent problems and barriers encountered. In addition, if these suggestions are well conceived and considered, many future challenges could be avoided.

E-government now is inevitable. It is a vital requirement for progress and development in the future. There is not a country in the world that does not implement or at least is considering e-government project implementation. E-service projects are certainly a major part of e-government as they service the country's citizens and they have changed the nature of the relationship between citizen and government. This research aspires to add contribution in this area which can benefit the Egyptian government.

REFERENCES

Abanumy, A., Al-Badi, A. and Mayhew, P. (2005), "E-Government Website Accessibility: In-Depth Evaluation of Saudi Arabia and Oman", *The Electronic Journal of E-Government,* vol. 3, no. 3, pp. 99-106.

Accenture (2010), *Accenture Public Service Value Governance Framework*, available at: http://www.accenture.com/Global/Research_and_Insights/Institute_For_Public_Service_Value/AccentureFramework.htm (accessed January 2011).

AFFIRM (2002), *A Blueprint for Successful E-Government Implementation: Steps to Accelerate Cultural Change and Overcome Stakeholder Resistance,* June, The Association for Federal Information Resources Management, Washington, DC.

AFFIRM (2001), *Transformation to an Electronic Government: The Promise and the Challenge,* July, The Association for Federal Information Resources Management, Washington, DC.

Affisco, J. F. and Soliman, K. S. (2006), "E-Government: A Strategic Operations Management Framework for Service Delivery", *Business Process Management Journal,* vol. 12, no. 1, pp. 13-21.

Aichholzer, G. (2004), "Scenarios of E-Government in 2010 and Implications for Strategy Design", *Electronic Journal of E-Government,* vol. 2, no. 1, pp. 1-10.

Åkesson, M., Skålén, P. and Edvardsson, B. (2008), "E-Government and Service Orientation: Gaps Between Theory and Practice", *The International Journal of Public Sector Management,* vol. 21, no. 1, pp. 74-92.

Albusaidy, M. and Weerakkody, V. (2008), "Factors Influencing E-Government Implementation Progress in Oman: A Discussion", Irani, Z., Sahraoui, S., Ghoneim, A., et al (eds.), in: *Proceedings of the European and Mediterranean Conference on Information Systems, (EMCIS08),* May 24-26, Dubai, UAE.

Aldrich, D., Bertot, J. C. and McClure, C. R. (2002), "E-Government: Initiatives, Developments, and Issues.", *Government Information Quarterly,* vol. 19, no. 4, pp. 349-355.

Al-Fakhri, M. O., Cropf, R. A., Kelly, P. and Higgs, G. (2008), "E-Government in Saudi Arabia: Between Promise and Reality", *International Journal of Electronic Government Research,* vol. 4, no. 2, pp. 59-85.

Alford, J. (2002), "Defining the Client in the Public Sector: A Social-Exchange Perspective", *Public Administration Review,* vol. 62, no. 3, pp. 337-346.

AL-Rababah, B. and Abu-Shanab, E. (2010), "E-Government and Gender Digital Divide: the Case of Jordan", *International Journal of Electronic Business Management,* vol. 8, no. 1, pp. 1-8.

Al-Sebie, M. and Irani, Z. (2005), "Technical and Organisational Challenges Facing Transactional E-Government Systems: An Empirical Study", *Electronic Government, An International Journal,* vol. 2, no. 3, pp. 247-276.

AlShihi, H. (2006), *Critical Factors in the Adoption and Diffusion of E-Government Initiatives in Oman* (unpublished PhD thesis), School of Information Systems, Faculty of Business and Law, Victoria University.

Al-Sobhi, F., Weerakkody, V. and Kamal, M. M. (2010), "An Exploratory Study on the Role of Intermediaries in Delivering Public Services in Madinah City", *Transforming Government: People, Process and Policy,* vol. 4, no. 1, pp. 14-36.

Altameem, T., Zairi, M. and Alshawi, S. (2007), "Critical Success Factors of E-Government: A Proposed Model for E-Government Implementation", *4th International Conference on Innovations in Information Technology,* 18-20 November, Dubai, United Arab Emirates, IEEE, p. 1.

Ancarani, A. (2005), "Towards Quality E-Service in the Public Sector: The Evolution of Web Sites in the Local Public Service Sector", *Managing Service Quality,* vol. 15, no. 1, p. 6.

Andersen, K., Henriksen, H., Medaglia, R., Danziger, J., Sannarnes, M. and Enemaerke, M. (2010), "Fads and Facts of E-Government: A Review of Impacts of E-government (2003-2009)", *International Journal of Public Administration,* vol. 33, no. 11, pp. 564.

Andersen, K. V. (2006), "E-Government: Five Key Challenges for Management", *The Electronic Journal of E-Government,* vol. 4, no. 1, pp. 1-8.

Andersen, K. V. and Henriksen, H. Z. (2006), "E-Government Maturity Models: Extension of the Layne and Lee Model", *Government Information Quarterly,* vol. 23, no. 2, pp. 236-248.

Andersen, T. B. (2009), "E-Government as an Anti-Corruption Strategy", *Information Economics and Policy,* vol. 21, no. 3, pp. 201-210.

Angelopoulos, S., Kitsios, F. and Papadopoulos, T. (2010), "New Service Development in E-Government: Identifying Critical Success Factors",

Transforming Government: People, Process and Policy, vol. 4, no. 1, pp. 95-118.

Atuahene-Gima, K. (2004), "Doing Good Research: Challenges and Some Strategies", *Academy of Management Conference,* August, New Orleans, US.

Azab, N. A., Kamel, S. and Dafoulas, G. (2009), "A Suggested Framework for Assessing Electronic Government Readiness in Egypt", *The Electronic Journal of E-Government,* vol. 7, no. 1, pp. 11-28.

Barbour, R. (2001), "Checklists for Improving Rigour in Qualitative Research: a Case of the Tail Wagging the Dog?", *British Medical Journal,* vol. 322, no. 7294, pp. 1115-1117.

Basu, S. (2004), "E-Government and Developing Countries: An Overview", *International Review of Law, Computers and Technology,* vol. 18, no. 1, pp. 109-132.

Baum, C. and Di Maio, A. (2000), "Gartner's Four Phases of E-Government Model", *Stamford, Ct., Gartner Group,* vol. 21, pp. 12-6113.

Baumeister, R. F. and Leary, M. R. (1997), "Writing Narrative Literature Reviews", *Review of General Psychology,* vol. 1, no. 3, pp. 311-320.

Bazeley, P. (2007), *Qualitative Data Analysis with NVivo,* Sage Publications Ltd, London, UK.

Bazeley, P. and Richards, L. (2000), *The NVivo Qualitative Project Book,* Sage Publications Ltd, London, UK.

Bélanger, F. and Carter, L. (2008), "Trust and Risk in E-Government Adoption", *The Journal of Strategic Information Systems,* vol. 17, no. 2, pp. 165-176.

Bélanger, F. and Hiller, J. S. (2006), "A Framework for E-Government: Privacy Implications", *Business Process Management Journal,* vol. 12, no. 1, pp. 48-60.

Benbasat, I., Goldstein, D. K. and Mead, M. (1987), "The Case Research Strategy in Studies of Information Systems", *MIS Quarterly,* vol. 11, no. 3, pp. 369-386.

Bhatnagar, S. (2006)*, Paving the Road Towards Pro-Poor E-Governance, Findings and Observations from Asia-Pacific Case Studies*, available at: http://www.apdip.net/projects/egovernment/capblg/casestudies/Overview.pdf (accessed May 2009).

Bhuiyan, S. (2010), "E-Government in Kazakhstan: Challenges and Its Role to Development", *Public Organization Review,* vol. 10, no. 1, pp. 31-47.

Bollettino, J. O. (2002), "The Customer-Centric Digital Department: E-Service in Government", in Rust, R. and Kannan, P. (eds.) *E-Service: New Directions in Theory and Practice.* Sharpe, Inc., pp. 262-285.

Bonham, G. M. and Seifert, G. (2003), "The Transformative Potential of E-Government in Transitional Democracies", *Public Management Electronic Journal,* vol. 11, no. 2, pp. 1-8.

Bowers, M. R. and Martin, C. L. (2007), "Trading Places Redux: Employees as Customers, Customers as Employees", *The Journal of Services Marketing,* vol. 21, no. 2, pp. 88-98.

Boyer, K. K., Hallowell, R. and Roth, A. V. (2002), "E-Services: Operating strategy - A case Study and a Method for Analyzing Operational Benefits", *Journal of Operations Management,* vol. 20, no. 2, pp. 175-188.

Bozeman, B. (1999), *Bureaucracy and Red Tape,* Prentice Hall, Upper Saddle River, New Jersey.

Brown, M. M. and Brudney, J. L. (2003), "Learning Organizations in the Public Sector: A study of Police Agencies Employing Information and Technology to Advance Knowledge", *Public Administration Review,* vol. 63, no. 1, pp. 30-43.

Bryman, A. (2008), *Social Research Methods,* Third Edition ed, Oxford University Press, New York, United States.

Bryman, A. (1989), *Research Methods and Organization Studies,* Routledge, London, UK.

Buckley, J. (2003), "E-Service Quality and the Public Sector", *Managing Service Quality,* vol. 13, no. 6, pp. 453-462.

Butler, P. and Collins, N. (1995), "Marketing Public Sector Services: Concepts and Characteristics", *Journal of Marketing Management,* vol. 11, no. 1-3, pp. 83-96.

CAPMAS (2010), *Central Agency for Population Mobilization and Statistics-Population Clock*, available at: http://www.msrintranet.capmas.gov.eg/pls/fdl/tst12e?action=&lname= (accessed January 2011).

Carter, L. and Bélanger, F. (2005), "The Utilization of E-Government Services: Citizen Trust, Innovation and Acceptance Factor", *Information Systems Journal,* vol. 15, no. 1, pp. 5-25.

Chalhoub, M. (2010), "Public Attitudes Towards Government Restructuring of IT Public Services: Application to E-Government in the Middle East", *International Journal of Management,* vol. 27, no. 3, pp. 541-580.

Chan, C. M. L. and Pan, S. L. (2008), "User Engagement in E-Government Systems Implementation: A Comparative Case Study of Two Singaporean E-Government Initiative", *The Journal of Strategic Information Systems,* vol. 17, no. 2, pp. 124-139.

Chan, F., Thong, J., Venkatesh, V., Brown, S., Hu, P. and Tam, K. (2010), "Modeling Citizen Satisfaction with Mandatory Adoption of an E-Government Technology", *Journal of the Association for Information Systems,* vol. 11, no. 10, pp. 519-549.

Chatfield, A. and Al Hujran, O. (2007), "The Role of Strategic Leadership in Driving Transformative E-Government: A Comparative Analysis of the Arab States in the Middle East", *Proceedings of the 7th European Conference on E-Government,* 21-22 June, Haagse Hoge School, Den Haag, The Netherlands, Academic Conferences Limited, p. 71.

Chen, A. J., Pan, S. L., Zhang, J., Huang, W. W. and Zhu, S. (2009), "Managing E-Government Implementation in China: A Process Perspective", *Information and Management,* vol. 46, no. 4, pp. 203-212.

Chen, Y. N., Chen, H. M., Huang, W. and Ching, R. K. H. (2006), "E-Government Strategies in Developed and Developing Countries: An Implementation Framework and Case Study", *Journal of Global Information Management,* vol. 14, no. 1, pp. 23-46.

Chen, Y., Chen, H. M., Ching, R. K. H. and Huang, W. W. (2007), "Electronic Government Implementation: A Comparison Between Developed and Developing Countries", *International Journal of Electronic Government Research,* vol. 3, no. 2, pp. 45-61.

Chengalur-Smith, I. and Duchessi, P. (2002), "Client-Server Implementation: Some Management Pointers", *IEEE Transactions on Engineering Management,* vol. 47, no. 1, pp. 127-145.

Coursey, D. and Norris, D. (2008), "Models of E-Government: Are They Correct? An Empirical Assessment", *Public Administration Review,* vol. 68, no. 3, pp. 523-536.

Creswell, J. W. (1998), *Qualitative Inquiry and Research Design: Choosing Among Five Traditions,* Sage Publications, Inc, USA.

Criado, J. I. and Ramilo, M. C. (2003), "E-Government in Practice: An Analysis of Web Site Orientation to the Citizens in Spanish Municipalities",

International Journal of Public Sector Management, vol. 16, no. 3, pp. 191-218.

Dada, D. (2006), "The Failure of E-Government in Developing Countries: A Literature Review", *The Electronic Journal of Information Systems in Developing Countries,* vol. 26, no. 7, pp. 1-10.

Dadashzadeh, M. (2010), "Social Media In Government: From E-Government To E-Governance", *Journal of Business and Economics Research,* vol. 8, no. 11, pp. 81-86.

Darwish, A. M. (2008), "Egypt: From E-Government to E-Governance – The Road to Fast Pace Development", *Proceedings of International Conference on Theory and Practice on Electronic Governance ICEGOV,* 1-4 December, Egypt, ACM Press, New York, USA, p. 1.

Davison, R. M., Wagner, C. and Louis, C. K. (2005), "From Government to E-Government: a Transition Model", *Information Technology and People,* vol. 18, no. 3, pp. 280-299.

Deakins, E., Dillon, S., Namani, H. and Zhang, C. (2010), "Local E-Government Impact in China, New Zealand, Oman, and the United Kingdom", *The International Journal of Public Sector Management,* vol. 23, no. 6, pp. 520-534.

Dul, J. and Hak, T. (2008), *Case Study Methodology in Business Research,* First Edition ed, Butterworth-Heinemann, Oxford, UK.

Dwivedi, Y. K. (2009), "An Analysis of E-Government Research", *Transforming Government: People, Process and Policy,* vol. 3, no. 1, pp. 7-15.

Easterby-Smith, M., Thorpe, R. and Lowe, A. (2002), *Management Research: An Introduction,* Second Edition ed, Sage Publications Ltd, London, UK.

Ebbers, W. E., Pieterson, W. J. and Noordman, H. N. (2008), "Electronic Government: Rethinking Channel Management Strategies", *Government Information Quarterly,* vol. 25, no. 2, pp. 181-201.

Ebbers, W. E. and van Dijk, J. A. G. M. (2007), "Resistance and Support to Electronic Government, Building a Model of Innovation", *Government Information Quarterly,* vol. 24, no. 3, pp. 554-575.

Ebrahim, Z. and Irani, Z. (2005), "E-Government Adoption: Architecture and Barriers", *Business Process Management Journal,* vol. 11, no. 5, pp. 589-611.

Eisenhardt, K. M. (1989), "Building Theories From Case Study Research", *The Academy of Management Review,* vol. 14, no. 4, pp. 532-550.

Esteves, J. and Joseph, R. C. (2008), "A Comprehensive Framework for the Assessment of E-Government Projects", *Government Information Quarterly,* vol. 25, no. 1, pp. 118-132.

Evans, D. and Yen, D. C. (2005), "E-Government: an Analysis for Implementation Framework for Understanding Cultural and Social Impact", *Government Information Quarterly,* vol. 22, no. 3, pp. 354-373.

Eyob, E. (2004), "E-Government: Breaking the Frontiers of Inefficiencies in the Public Sector", *Electronic Government, an International Journal,* vol. 1, no. 1, pp. 107-114.

Fedorowicz, J., Gogan, J. and Culnan, M. (2010), "Barriers to Interorganizational Information Sharing in E-Government: A Stakeholder Analysis", *Information Society,* vol. 26, no. 5, pp. 315-329.

Flak, L. S. and Rose, J. (2005), "Stakeholder Governance: Adapting Stakeholder Theory to E-Government", *Communications of the Association for Information Systems,* vol. 16, no. 1, pp. 642-664.

Fountain, J. E. (2001), *Building the Virtual State: Information Technology and Institutional Change,* Brookings Institution, Washington, DC.

Gagnon, Y., Posada, E., Bourgault, M. and Naud, A. (2010), "Multichannel Delivery of Public Services: A New and Complex Management Challenge", *International Journal of Public Administration,* vol. 33, no. 5, pp. 213-222.

Gichoya, D. (2005), "Factors Affecting the Successful Implementation of ICT Projects in Government", *The Electronic Journal of E-Government,* vol. 3, no. 4, pp. 175-184.

Gilbert, D., Balestrini, P. and Littleboy, D. (2004), "Barriers and Benefits in the Adoption of E-Government", *International Journal of Public Sector Management,* vol. 17, no. 4, pp. 286-301.

Gil-García, J. R. and Martinez, M. I. J. (2007), "Understanding the Evolution of E-Government: The Influence of Systems of Rules on Public Sector Dynamics", *Government Information Quarterly,* vol. 24, no. 2, pp. 266-290.

Gil-García, J. R. and Pardo, T. A. (2005), "E-Government Success Factors: Mapping Practical Tools to Theoretical Foundations", *Government Information Quarterly,* vol. 22, no. 2, pp. 187-216.

Golafshani, N. (2003), "Understanding Reliability and Validity in Qualitative Research", *The Qualitative Report,* vol. 8, no. 4, pp. 597-607.

Gottschalk, P. (2009), "Maturity Levels for Interoperability in Digital Government", *Government Information Quarterly,* vol. 26, no. 1, pp. 75-81.

Grant, G. and Chau, D. (2005), "Developing a Generic Framework for E-Government", *Journal of Global Information Management,* vol. 13, no. 1, pp. 1-30.

Guida, J. and Crow, M. (2009), "E-Government and E-Governance", in Unwin, T. (ed.) *ICT4D: Information and Communication Technology for Development,* Cambridge University Press, UK, pp. 283-316.

Gunter, B. (2006), "Advances in E-Democracy: Overview", *Aslib Proceedings,* vol. 58, no. 5, pp. 361-370.

Halchin, L. E. (2004), "Electronic Government: Government Capability and Terrorist Resource", *Government Information Quarterly,* vol. 21, no. 4, pp. 406-419.

Hamner, M. and Al-Qahtani, F. (2009), "Enhancing the Case for Electronic Government in Developing Nations: A People-Centric Study Focused in Saudi Arabia", *Government Information Quarterly,* vol. 26, no. 1, pp. 137-143.

Hassan, H., Shehab, E. and Peppard, J. (2011a), "A Framework for E-Service Implementation in the Developing Countries", *International Journal of Customer Relationship Marketing and Management,* vol. 2, no. 1, pp. 52-65.

Hassan, H., Shehab, E. and Peppard, J. (2011b), "Recent Advances in E-Service in the Public Sector: State of-the-Art and Future Trends", *Business Process Management Journal,* vol. 17, no. 3.

Hassan, H., Shehab, E. and Peppard, J. (2010), "Toward Full Public E-Service Environment in Developing Countries", *International Conference on E-Commerce, E-Business and E-Service,* Vol. 66, 28-30 June, Paris, France, World Academy of Science, Engineering and Technology, p. 618.

Hassan, H., Shehab, E. and Peppard, J. (2008), "Adoption of E-Service in Developing Countries: Issues and Challenges", *Cranfield Multi-Strand Conference (CMC); Creating Wealth Through Research and Innovation,* 6-7 May, Cranfield, UK, Cranfield University Press, Cranfield, UK, p. 454.

Heeks, R. (2006), *Benchmarking E-Government: Improving the National and International Measurement, Evaluation and Comparison of E-Government,* Paper No. 18, I-Government Working Paper Series, Development Informatics Group, Institute for Development Policy and Management, University of Manchester, Manchester, UK.

Heeks, R. (2004), *E-Government for Development: Success and Failure in E-Government Projects,* , Institute for Development Policy and Management (IDPM), University of Manchester, Manchester, UK.

Heeks, R. (2003), *Most E-Government for Development Projects Fail: How Can Risks Be Reduced?* Paper No. 14, I-Government Working Paper Series, Development Informatics Group, Institute for Development Policy and Management, University of Manchester, Manchester, UK.

Heeks, R. (2002a), "E-Government in Africa: Promise and practice", *Information Polity,* vol. 7, no. 2, pp. 97-114.

Heeks, R. (2002b), "Information Systems and Developing Countries: Failure, Success, and Local Improvisations", *The Information Society,* vol. 18, no. 2, pp. 101-112.

Heeks, R. (2001), *Understanding E-Governance for Development,* Paper No. 11, I-Government Working Paper Series, Development Informatics Group, Institute for Development Policy and Management, University of Manchester, Manchester, UK.

Heeks, R. (2000), *Government Data: Understanding the Barriers to Citizen Access and Use,* Paper No. 10, I-Government Working Paper Series, Development Informatics Group, Institute for Development Policy and Management, University of Manchester, Manchester, UK.

Heeks, R. and Bailur, S. (2007), "Analyzing E-Government Research: Perspectives, Philosophies, Theories, Methods, and Practice", *Government Information Quarterly,* vol. 24, no. 2, pp. 243-265.

Heeks, R. and Santos, R. (2009), *Enforcing Adoption of Public Sector Innovations: Principals, Agents and Institutional Dualism in a Case of E-Government,* Paper No. 19, I-Government Working Paper Series, Development Informatics Group, Institute for Development Policy and Management, University of Manchester, Manchester, UK.

Helbig, N., Gil-García, R. J. and Ferro, E. (2009), "Understanding the Complexity of Electronic Government: Implications from the Digital Divide Literature", *Government Information Quarterly,* vol. 26, no. 1, pp. 89-97.

Herriot, R. E. and Firestone, W. A. (1983), "Multisite Qualitative Policy Research: Optimizing Description and Generalizability", *Educational Researcher,* vol. 12, no. 2, pp. 14-19.

Ho, A. T. K. (2002), "Reinventing Local Governments and the E-Government Initiative", *Public Administration Review,* vol. 62, no. 4, pp. 434-444.

Ho, J. and Pardo, T. A. (2004), "Toward the Success of E-Government Initiatives: Mapping Known Success Factors to the Design of Practical Tools", *Proceedings of the 37th Annual Hawaii International Conference on Systems Sciences,* Vol. 5, 5-8 January, Waikoloa, Hawaii, IEEE, p. 6.

Huber, J. D. and Shipan, C. R. (2002), *Deliberate Discretion: The Institutional Foundations of Bureaucratic Autonomy,* Cambridge University Press, UK.

Hung, S., Tang, K., Chang, C. and Ke, C. (2009), "User Acceptance of Intergovernmental Services: An Example of Electronic Document Management System", *Government Information Quarterly,* vol. 26, no. 2, pp. 387-397.

IMF (2010), *Arab Republic of Egypt: Staff Report; Public Information Notice on the Executive Board Discussion; and Statement by the Executive Director for the Arab Republic of Egypt,* No. 10/94, International Monetary Fund Country Report.

InfoDev (2002), *The E-Government Handbook for Developing Countries,* November ed, Information for Development Program and The Center for Democracy and Technology, Washington, DC.

Jaeger, P. T. and Thompson, K. M. (2003), "E-Government Around the World: Lessons, Challenges, and Future Directions", *Government Information Quarterly,* vol. 20, no. 4, pp. 389-394.

Janssen, M., Chun, S. and Gil-García, J. R. (2009), "Building the Next Generation of Digital Government Infrastructures", *Government Information Quarterly,* vol. 26, no. 2, pp. 233-237.

Johnson, P. and Harris, D. (2002), "Qualitative and Quantitative Issues in Research Design", in Partington, D. (ed.) *Essential Skills for Management Research,* Sage Publications, London, UK., pp. 99-116.

Jones, S., Hackney, R. and Irani, Z. (2007), "E-Government: an E-Reverse Auction Case Study", *Electronic Government,* vol. 4, no. 4, pp. 412-422.

Klein, H. K. and Myers, M. D. (1999), "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems", *MIS quarterly,* vol. 23, no. 1, pp. 67-93.

Lagzian, M. (2007), "A Diagnostic Framework to Identify the Major Challenges in Transition from a Traditional Government to E-Government", Janowski, T. and Pardo, T. (eds.), in: *Proceedings of the 1st International Conference on Theory and Practice of Electronic Governance,* 10-13 December, Macao, China, ACM International Conference Proceedings Series, p. 451.

Lagzian, M. (2006), "Barriers of E-Government Development: An Iranian Case Study", *E-Government Asia Conference,* 25 - 28 April, Bangkok, Thailand, Centre for Science, Development and Media Studies (CSDMS).

Lam, W. (2005), "Barriers to E-Government Integration", *Journal of Enterprise Information Management,* vol. 18, no. 5, pp. 511-530.

Lau, T. Y., Aboulhoson, M., Lin, C. and Atkin, D. J. (2008), "Adoption of E-Government in Three Latin American Countries: Argentina, Brazil and Mexico", *Telecommunications Policy,* vol. 32, no. 2, pp. 88-100.

Layne, K. and Lee, J. (2001), "Developing Fully Functional E-Government: A Four Stage Model", *Government Information Quarterly,* vol. 18, no. 2, pp. 122-136.

Lee, H., Irani, Z., Osman, I. H., Balci, A., Ozkan, S. and Medeni, T. D. (2008), "Research Note: Toward a Reference Process Model for Citizen-Oriented Evaluation of E-Government Services", *Transforming Government: People, Process and Policy,* vol. 2, no. 4, pp. 297-310.

Lenk, K. and Traunmüller, R. (2002), "Preface to the Focus Theme on E-Government", *Electronic Markets,* vol. 12, no. 3, pp. 147-149.

Long, T. and Johnson, M. (2000), "Rigour, Reliability and Validity in Qualitative Research", *Clinical Effectiveness in Nursing,* vol. 4, no. 1, pp. 30-37.

Lowery, D. and Evans, K. G. (2004), "The Iron Cage of Methodology: The Vicious Circle of Means Limiting Ends Limiting Means", *Administration and Society,* vol. 36, no. 3, pp. 306-327.

Lowery, L. M. (2001), *Developing a Successful E-Government Strategy,* Department of Telecommunications and Information Services, San Francisco.

Marshall, C. and Rossman, G. B. (1995), *Designing Qualitative Research,* Second Edition ed, Sage Thousand Oaks, California, USA.

MCIT (2010)*, ICT Indicators in Brief: Monthly Issue, November 2010*, available at: http://www.mcit.gov.eg/Upcont/Documents/ICT%20Indicators%20in%20Brief-November-%20en2010122312142.pdf (accessed January 2011).

MCIT (2004), *EISI-Government: The Egyptian Information Society Initiative for Government Services Delivery* (unpublished Official Document), Egypt.

Means, G. and Schneider, D. M. (2000), *Metacapitalism: The E-Business Revolution and the Design of 21st-Century Companies and Markets,* John Wiley and Sons, Inc., New York, United States.

Melin, U. and Axelsson, K. (2009), "Managing E-Service Development: Comparing Two E-Government Case Studies", *Transforming Government: People, Process and Policy,* vol. 3, no. 3, pp. 248-270.

Microsoft Egypt Press (2004)*, Egypt E-Government, Egyptian National IT Plan, The Egyptian Government and Microsoft- a Successful Partnership in*

Egypt's Digital Renaissance, available at: http://www.microsoft.com/middleeast/egypt/english/press/casestudy/egovernment.aspx (accessed October 2010).

Miles, M. B. and Huberman, A. M. (1994), *Qualitative Data Analysis: An Expanded Source Book,* Second Edition ed, Sage Publications, Thousands Oaks, California.

Misra, D. and Dhingra, C. A. (2002), "E-Governance Maturity Model", *Electronic Information Planning Journal,* vol. 29, no. 6-7, pp. 269-275.

Montagna, J. M. (2005), "A Framework for the Assessment and Analysis of Electronic Government Proposals", *Electronic Commerce Research and Applications,* vol. 4, no. 3, pp. 204-219.

Moon, M. J. (2002), "The Evolution of E-Government Among Municipalities: Rhetoric or Reality?", *Public Administration Review,* vol. 62, no. 4, pp. 424-433.

MSAD (2010)*, The Ministry of State Administrative Development*, available at: http://www.msad.gov.eg/About%20MSAD/Programs/ (in Arabic) (accessed December 2010).

Mukabeta, M. B., Owei, V. and Alexander, H. (2008), "Questioning the Pace and Pathway of E-Government Development in Africa: A Case Study of South Africa's Cape Gateway Project", *Government Information Quarterly,* vol. 25, no. 4, pp. 757-777.

Myers, M. D. and Avison, D. (2002), *An Introduction to Qualitative Research in Information Systems,* Sage Publications, UK.

Norris, D. F. and Moon, M. J. (2005), "Advancing E-Government at the Grassroots: Tortoise or Hare?", *Public Administration Review,* vol. 65, no. 1, pp. 64-75.

Oates, B. J. (2006), *Researching Information Systems and Computing,* Sage Publications Ltd, London.

Okot-Uma, R. W. O. (2000), "Electronic Governance: Re-inventing Good Governance", *Commonwealth Secretariat, London*.

Palanisamy, R. (2004), "Issues and Challenges in E-Governance Planning", *Electronic Government, an International Journal,* vol. 1, no. 3, pp. 253-272.

Pascual, P. J. (2003), *E-Government,* E-ASEAN Task Force, UNDP- Asia Pacific Development Information Programme APDIP.

Patton, M. Q. (2002), *Qualitative Research and Evaluation Methods,* Third Edition ed, Sage Publications, Inc, USA.

Pina, V., Torres, L. and Royo, S. (2010), "Is E-Government Leading to More Accountable and Transparent Local Governments? An Overall View", *Financial Accountability and Management,* vol. 26, no. 1, pp. 3-20.

Pinteri, U. (2010), "Development of E-Government Services for Citizens in Slovenia: Theory and Practice", *Eastern European Economics,* vol. 48, no. 3, pp. 88-98.

Prattipati, S. N. (2003), "Adoption of E-Governance: Differences Between Countries in the Use of Online Government Services", *Journal of American Academy of Business,* vol. 3, no. 1/2, pp. 386-398.

QSR International (2011), *Software Package for Qualitative Data Analysis*, available at: http://www.qsrinternational.com/default.aspx#tab_you (accessed May 2011).

Reddick, C. G. (2004), "A Two-Stage Model of E-Government Growth: Theories and Empirical Evidence for US Cities", *Government Information Quarterly,* vol. 21, no. 1, pp. 51-64.

Reffat, R. (2003), "Developing a Successful E-Government", *Proceedings of the Symposium on E-Government: Opportunities and Challenge,* Muscat Municipality, Oman, p. IV1.

Richards, L. (1999), *Using NVivo in Qualitative Research,* First Edition ed, Sage Publications Ltd, London.

Ritzer, G. (2009), *Contemporary Sociological Theory and Its Classical Roots: The Basics,* Third Edition ed, McGraw-Hill, New York.

Robson, C. (2002), *Real World Research: A Resource for Social Scientists and Practitioner-Researchers,* Second Edition ed, Blackwell Publishers Ltd, Oxford, UK.

Rowley, J. (2011), "E-Government Stakeholders - Who Are They and What Do They Want?", *International Journal of Information Management,* vol. 31, no. 1, pp. 53-62.

Rust, R. T. and Kannan, P. K. (eds.) (2002), *E-Service: New Directions in Theory and Practice,* M.E.Sharpe, Inc., Armonk, New York.

Salem, F. (2006), "Exploring E-Government Barriers in the Arab States", *Arab Strategy Forum,* Vol. Policy Brief No. 2, Dubai, Dubai School of Government.

Sarabdeen, J. and Rodrigues, G. (2010), "Gender Differences in E-Government Adoption in Dubai", *The Business Review,* vol. 16, no. 2, pp. 120-126.

Schedler, K. and Scharf, M. C. (2001), "Exploring The Interrelations Between Electronic Government And The New Public Management", *Proceedings of the IFIP Conference on Towards The E-Society: E-Commerce, E-Business, E-Government,* Vol. 202, 3-5 October, Zurich, Switzerland, p. 775.

Schuppan, T. (2009), "E-Government in Developing Countries: Experiences from Sub-Saharan Africa", *Government Information Quarterly,* vol. 26, no. 1, pp. 118-127.

Schwester, R. (2009), "Examining the Barriers to E-Government Adoption", *Electronic Journal of E-Government,* vol. 7, no. 1, pp. 113-122.

Seifert, J. W. and Petersen, R. E. (2002), "The Promise of All Things: Expectations and Challenges of Emergent Electronic Government", *Perspectives on Global Development and Technology,* vol. 1, no. 2, pp. 193-212.

Seifert, J. W. and Relyea, H. C. (2004), "Evolving Definitions of E-Government", *Journal of E-Government,* vol. 1, no. 1, pp. 7-14.

Shackleton, P., Fisher, J. and Dawson, L. (2006), "E-Government Services in the Local Government Context: an Australian Case Study", *Business Process Management Journal,* vol. 12, no. 1, pp. 88-100.

Sharma, S. K. and Gupta, J. N. D. (2003), "Building Blocks of an E-Government: A Framework", *Journal of Electronic Commerce in Organizations,* vol. 1, no. 4, pp. 34-48.

Shaw, E. (1999), "A Guide to The Qualitative Research Process: Evidence From a Small Firm Study", *Qualitative Market Research: An International Journal,* vol. 2, no. 2, pp. 59-70.

Sheridan, W. and Riley, T. B. (2006), *Comparing E-Government Versus E-Governance*, available at: http://www.electronicgov.net/pubs/research_papers/SheridanRileyComparEgov.pdf (accessed October 2010).

Siau, K. and Long, Y. (2005), "Synthesizing E-Government Stage Models–a Meta-Synthesis Based on Meta-Ethnography Approach", *Industrial Management and Data Systems,* vol. 105, no. 4, pp. 443-458.

Steyaert, J. (2002), "Performance Metrics and Successful E-Government Services", in Rust, R. T. and Kannan, P. K. (eds.) *E-Service: New Directions in Theory and Practice,* M.E. Sharpe. Inc., Armonk, New York, pp. 286-314.

Tesch, R. (1990), *Qualitative Research: Analysis Types and Software Tools,* Routledge Falmer, London, UK.

Tian, J. and Tainfield, H. (2003), "Some Perspectives of E-Government", *Proceedings of the third European Conference on E-Government,* 23 May, Trinity College Dublin, p. 427.

Transparency International (2010)*, Corruption Perception Index*, available at: http://www.transparencykazakhstan.org/UserFiles/file/CPI2010_table_sources_2010-10-20[1].pdf (accessed 15 May 2011).

Trkman, P. and Turk, T. (2009), "A Conceptual Model for the Development of Broadband and E-Government", *Government Information Quarterly,* vol. 26, no. 2, pp. 416-424.

Tseng, P. Y., Yen, D. C., Hung, Y. and Wang, N. C. F. (2008), "To Explore Managerial Issues and Their Implications on E-Government Deployment in the Public Sector: Lessons from Taiwan's Bureau of Foreign Trade", *Government Information Quarterly,* vol. 25, no. 4, pp. 734-756.

United Nations (2010), *E-government Survey: Leveraging E-Government at a Time of Financial and Economic Crisis,* Department of Economic and Social Affairs, UN Publishing Section, New York, United States.

United Nations (2008), *Government to Connected Governance,* Department of Economic and Social Affairs, Division for Public Administration and Development Management, New York, United States.

United Nations (2005), *Global E-Government Readiness Report: from E-Government to E-Inclusion,* Department of Economic and Social Affairs, Division for Public Administration and Development Management, New York.

United Nations (2004), *Global E-Government Readiness Report: Towards Access for Opportunity,* Department of Economic and Social Affairs, Division for Public Administration and Development Management, New York.

United Nations (2003a), *UN Global E-Government Survey,* Department of Economic and Social Affairs, Division for Public Administration and Development Management, New York.

United Nations (2003b), *World Public Sector Report : E-Government at the Crossroads,* Department of Economic and Social Affairs, Division for Public Administration and Development Management, New York.

United Nations (2002), *Benchmarking E-Government: A Global Perspective. Assessing the Progress of the UN Member States,* Division for Public Economics and Public Administration (DPEPA), New York, United States.

Van, M. J. (1983), *Qualitative Methodology,* Sage Thousand Oaks, Calif., London, UK.

Vassilakis, C., Lepouras, G., Fraser, J., Haston, S. and Georgiadis, P. (2005), "Barriers to Electronic Service Development", *E-Service Journal,* vol. 4, no. 1, pp. 41-63.

Vassilakis, C., Lepouras, G. and Halatsis, C. (2007), "A Knowledge-Based Approach for Developing Multi-Channel E-Government Services", *Electronic Commerce Research and Applications,* vol. 6, no. 1, pp. 113-124.

Velsen, L., Geest, T., Hedde, M. and Derks, W. (2009), "Requirements Engineering for E-Government Services: A Citizen-Centric Approach and Case Study", *Government Information Quarterly,* vol. 26, no. 3, pp. 477-486.

Waller, P., Livesey, P. and Edin, K. (2001), "E-Government in the Service of Democracy", *ICA Information,* vol. 74, no. General issue, pp. 1-6.

Walsham, G. (1995), "Interpretive Case Studies in IS Research: Nature and Method", *European Journal of Information Systems,* vol. 4, no. 2, pp. 74-81.

Wang, M. (2003), "Assessment of E-Service Quality via E-Satisfaction in E-Commerce Globalization", *The Electronic Journal of Information Systems in Developing Countries,* vol. 11, no. 10, pp. 1-4.

Weber, R. (2004), "The Rhetoric of Positivism Versus Interpretivism: A Personal View", *MIS Quarterly,* vol. 28, no. 1, pp. 3-12.

Webster, J. and Watson, R. T. (2002), "Analyzing the Past to Prepare for the Future: Writing a Literature Review", *MIS Quarterly,* vol. 26, no. 2, pp. 13-23.

Weerakkody, V. and Choudrie, J. (2005), "Exploring E-Government in the UK: Challenges, Issues and Complexities", *Journal of Information Science and Technology,* vol. 2, no. 2, pp. 25-45.

Whitby, P. (2005), "E-Government in Practice", *Intermedia,* vol. 33, no. 3, pp. 28-30.

Whitson, T. L. and Davis, L. (2001), "Best Practices in Electronic Government: Comprehensive Electronic Information Dissemination for Science and Technology", *Government Information Quarterly,* vol. 18, no. 2, pp. 79-91.

Wolcott, H. F. (1992), "Posturing in Qualitative Inquiry", in Le-Compte, M. D., Millroy, W. L. and Preissle, J. (eds.) *The Handbook of Qualitative Research in Education,* Academic Press, San Diego, California, USA, pp. 3-52.

Yang, K. (2003), "Neoinstitutionalism and E-Government", *Social Science Computer Review,* vol. 21, no. 4, pp. 432-442.

Yildiz, M. (2007), "E-Government Research: Reviewing the Literature, Limitations, and Ways Forward", *Government Information Quarterly,* vol. 24, no. 3, pp. 646-665.

Yin, R. K. (1994), *Case Study Research: Design and Method,* 2nd edition ed, Sage Publication, Thousand Oaks, California.

Zaied, A. N. H., Khairalla, F. A. and Al-Rashed, W. (2007), "Assessing E-Readiness in the Arab Countries: Perceptions Towards ICT Environment in Public Organisations in the State of Kuwait", *Electronic Journal of E-Government,* vol. 5, no. 1, pp. 77-86.

Zarei, B. and Ghapanchi, A. (2008), "Guidelines for Government-to-Government Initiative Architecture in Developing Countries", *International Journal of Information Management,* vol. 28, no. 4, pp. 277-284.

Zarei, B., Ghapanchi, A. and Sattary, B. (2008), "Toward National E-Government Development Models for Developing Countries: A Nine-Stage Model", *The International Information and Library Review,* vol. 40, no. 3, pp. 199-207.

Zhang, J., Dawes, S. S. and Sarkis, J. (2005), "Exploring Stakeholders' Expectations of the Benefits and Barriers of E-Government Knowledge Sharing", *Journal of Enterprise Information Management,* vol. 18, no. 5/6, pp. 548-567.

APPENDICES

Appendix A Pilot Surveys

A.1 Employees Surveys

Introduction:

This survey is being conducted as a part of a PhD research project at Cranfield University, and seeks to investigate the factors that either facilitate or impede the E-service initiatives.

Appropriate participants for this survey are considered to be those who are working closely in any e-service environment.

The survey results will be available for all participants. Your response really does count. However, as much as I value your responses to the survey, it is important to note that the participation is voluntary. The survey will take approximately 15 minutes to complete, and all responses will be treated as confidential and anonymous to protect the respondent identity in any published data.

Should you have any questions about the study, please contact the researcher, Hend Hassan through the e-mail given below.

Thank you for your participation

Hend Hassan

E-mail: h.s.h.hassan@cranfield.ac.uk

Section (1): Participant Background

Please answer a few questions about yourself:

1. What is your current age?

Under 18 ☐

18 – 22 ☐

23 - 30 ☐

31 – 45 ☐

46 – 65 ☐

Over 65 ☐

2. What is your gender?

Male ☐

Female ☐

3. Are you working as…?

Full time employee ☐

Part time employee ☐

Self employed ☐

Other (Please indicate)…☐……

4. What is your role in your organisation?

……

.....

.....

5. How long have you been working in this organisation?

Less than 1 year ☐

1 – 5 years ☐

6 – 10 years ☐

More than 10 years ☐

6. How do you consider your computer literacy?

Low ☐

Medium ☐

High ☐

7. Would you like a copy of the survey findings?

Yes ☐

No ☐

8. If yes, please provide your contact details:

Name: ……

E-mail: ……..

Section (2): Organisation Background

1. Please select your organisation category:

Public sector ☐

Private sector ☐

Non-profit organisation ☐

Other (Please indicate)..... ☐

2. How many employees does your organisation have?

Less than 50 ☐

50 – 250 ☐

More than 250 ☐

3. How many customers/ citizens does the organisation have?

Less than 1000 ☐

1000 – 5000 ☐

5001 – 10000 ☐

More than 10000 ☐

I don’t know ☐

4. Does your organisation have a website?

Yes ☐

No, but planning to develop one ☐

The organisation has no plans to develop one ☐

5. If yes, how does your organisation use its website? (You can tick more than box)

For information services ☐

For communication services ☐

For transaction services (e.g. payment of bills) ☐

For customers/citizens surveys ☐

Other (please indicate)……. ☐

6. Does your organisation offer e-services?

Yes ☐

No ☐

7. If yes, how long has your organisation been providing e-services?

Less than 1 year ☐

1 – 5 years ☐

6 – 10 years ☐

More than 10 years ☐

I don't know ☐

8. How would you position your organisation's use of technology applications as compared to other organisations you are familiar with?

A leader ☐

Ahead of most other organisations ☐

The same as other organisations ☐

Somewhat behind other organisations ☐

Significantly behind other organisations ☐

9. How would you position your organisation's use of the internet as compared to other organisations you are familiar with?

A leader ☐

Ahead of most other organisations ☐

The same as other organisations ☐

Somewhat behind other organisations ☐

Significantly behind other organisations ☐

10. Do you have access to PCs in your organisation?

No employees have access to PCs ☐

Some departments have PCs ☐

Every department has PCs ☐

Every employee has access to a PC ☐

Other ☐

(Please indicate)…….....

11. Is the internet access available in your organisation?

No employees have access to the internet ☐

Some departments have access to the internet ☐

Every department has access to the internet ☐

The organisation provides internet access for all employees ☐

Other ☐

(Please indicate)…….....

12. Do you have access to intranet in your organisation?

No employees have access to intranet ☐

Some departments have access to intranet ☐

The organisation provides intranet access to every department ☐

The organisation provides intranet access for all employees ☐

Other (Please indicate)…….. ☐

13. In relation to the e-service project that has been undertaken within your organisation, how successful is this project in your opinion?

Very successful	← →			**Very unsuccessful**
1	**2**	**3**	**4**	**5**

Section (3): Governing Enabler

Please choose the degree of your response that best expresses your view in terms of your experience of e-service in your organisation

1. My organisation has a clear, comprehensive vision to implement e-service

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

2. My organisation's vision effectively encourages employees' commitment to e-service implementation

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

3. My organisation's vision is well understood among employees in terms of e-service

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

4. My organisation defined formal methods and processes for establishing e-service strategies

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

5. My organisation is ready for e-service in social and technical terms

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

6. Top management encourages and participates in e-service implementation

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

7. E-service is a priority for the leadership

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

8. The leadership is active to mobilize human resources for e-service

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

9. My organisation suffers from lack of funds in terms of e-service projects

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

10. My organisation considers providing e-service as a long term investment

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

11. My organisation's IT infrastructure is ready for the e-service initiatives

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

12. The IT infrastructure is continuously improved

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

13. There are protocols such as Public Key Infrastructure (PKI) and electronic signature

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

14. Online security transactions are regularly monitored in my organisation

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

15. My organisation collaborates with other organisations that use Information and Communication Technologies (ICTs)

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

16. My organisation integrates with their departments to improve communication and share information via ICT

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

17. My organisation regularly coordinates with its collaborators

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

18. The legislation for e-service is in place

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

19. The administrative staff has the required skills and experience for e-service implementation

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

20. My organisation provides regular training sessions

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

21. There is full-time technical staff for e-service implementation

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

22. Structural changes were introduced prior to e-service implementation

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

23. The need for change management is being introduced by top management

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

24. My organisation implements processes re-engineering within departments and functions processes

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

25. Monitoring after e-service implementation is in place

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

26. My organisation is aware of the organisation culture as an important factor to successfully implement e-service

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

27. My organisation is implementing e-service as "customer/citizen-centric"

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

28. There are regular seminars and conferences related to e-service to reduce customer/citizen resistance

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

29. There are e-service awareness policies in my organisation

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

30. Customer/Citizens' participation and involvement is active regarding e-service implementation

Strongly disagree	☐	Strongly agree	☐
Disagree	☐	Agree	☐
Neutral	☐	I don't know	☐

Section (4): Barriers

Please identify the extent to which you have encountered the following barriers in your organisation:

Statement	Not a problem	Insignificant problem	Minor problem	Major problem	Extreme problem	I don't know
Lack of suitable legal framework/ Unsuitable legislations						
Lack of IT skills amongst staff						
Resistance to change amongst staff						
Lack of potential will and leadership						
Lack of competitive pressures forcing change						
Lack of vision and strategy						
Multi-lingual/ multi-cultural issues						
Lack of awareness/ information						
Lack of organisational coordination among organisations/ departments						
Lack of partner readiness and cooperation						
Lack of innovation incentives						
Old structure and processes						
Security and privacy						
Poor technological infrastructure						
High technology set-up cost						
General negative attitude against E-service						
Lack of recognition of organisational change rather than technical change						

Government's reluctance for citizens' involvement						
E-literacy						
Digital divide						
Inactive customer/citizens' participation						
Lack of financial resources						
Changing of the culture						
Conflicting priorities of organisations						
High service user cost and cost justification issues						
Complexity of required policies						
Poor organisational infrastructure						
Unreliable internet connections						
Lack of standards for quality, design of websites/portals						
Lack of expert assistance						
E-service is not priority						
Lack of methods for productivity and progress monitoring and accountability						
Lack of management support						
Difficulty in re-engineering of internal processes						
Insufficient user authentication methods						

In your opinion, are there any other barriers your organisation face regarding their e-service development and/or implementation?

a) ……
b) ……
c) ……...
d) ……

In your opinion, are there any suggested solutions to any of these barriers?

a) ……...
b) ……
c) ……
d) ……

Are there any further comments on the topic of e-service you wish to add?

……
……
……
……
……
……
……

Thank you for completing the survey!

Hend Hassan

PhD candidate

Cranfield University

A.2 Citizens Surveys

Introduction:

This survey is being conducted as a part of a PhD research project at Cranfield University, and seeks to investigate the factors that either facilitate or impede the e-service initiatives in the public sector.

All individuals are encouraged to participate in this survey, whether they have/ or have not been associated before with e-service activities.

The survey results will be available to all participants. Your response really does count. However, as much as I value your responses to the survey, it is important to note that the participation is voluntary. The survey will take approximately 15 minutes to complete, and all responses will be treated as confidential and anonymous to protect the respondent identity in any published data.

Should you have any questions about the study, please contact the researcher, Hend Hassan, through the e-mail given below.

Thank you for your participation

Hend Hassan

E-mail: h.s.h.hassan@cranfield.ac.uk

Section (1): Participant Background

Please answer a few questions about yourself. Please note that the following questions will be used only to classify responses by group and will not be used to try to contact you, or be disclosed to others.

1. What is your current age?

Under 18 ☐

18 – 22 ☐

23 - 30 ☐

31 – 45 ☐

46 – 65 ☐

Over 65 ☐

2. What is your gender?

Male ☐

Female ☐

3. Which country/city do you live in?

……

4. What is your highest level of education?

Below high school ☐

High school ☐

University graduate ☐

University post graduate ☐

Other, (Please indicate)…… ☐

5. What is your current employment status?

Student ☐

Employed / Self employed ☐

Unemployed ☐

Pensioner ☐

Other (Please indicate)……. ☐

6. What is your average annual income in Sterling pounds?

Less than 6,000 ☐

6,001 – 10,000 ☐

10,001 – 15,000 ☐

15,001 – 20,000 ☐

More than 20,000 ☐

7. How do you consider your computer literacy?

Low ☐

Medium ☐

High ☐

8. Would you like a copy of the survey findings?

Yes ☐

No ☐

If yes, please provide your contact details:

Name: …….....E-mail: .....….

Section (2): Participant Use of Internet

1. Do you agree that the internet is necessary to your life?

Yes ☐

No ☐

2. Do you have access to the internet?

Yes, I use a broadband technology ☐

I do not have broadband, but, still use the Internet ☐

I have no internet access at all ☐

Other, (please indicate)…… ☐

3. How can you get access to the internet? (You can tick more than one box)

I have my own PC ☐

I use libraries to have access ☐

I use Internet Cafes ☐

I use mobile phones ☐

Other (Please indicate)…….. ☐

4. How often do you use the internet?

Daily basis ☐

Twice or more a week ☐

Weekly basis ☐

Only when needed ☐

Never ☐

Other (Please indicate)…☐……..

5. Which one of the following do you most agree with?

I usually have a destination in mind when I go on the net ☐

I always have a destination in mind when I go on the net ☐

I never have a destination in mind when I go on the net ☐

Other (Please indicate)…….. ☐

6. How many sites do you visit on a regular basis (2 times or more per week)?

1 - 2 ☐

3 - 4 ☐

5 - 6 ☐

6 - 8 ☐

8 - 10 ☐

10+ ☐

Not applicable ☐

7. What is the biggest concern(s) you personally have with the use of the Internet? (You can tick more than one box)

Inaccurate information ☐

Violation of transaction security ☐

Violation of privacy ☐

Cost of using the service ☐

Malicious virus threats ☐

Other, (Please indicate)……..... ☐

8. What are the most important factors in a website you visit regularly? (You can tick more than one box)

Trusted ☐	Ease of use ☐	Comprehensiveness ☐
Familiar ☐	Fast ☐	Personally recommended ☐
Reliable ☐	More convenient than the offline alternative ☐	Well-established ☐
Entertaining ☐	Genuinely timesaving ☐	Authoritative ☐

Other (Please indicate)…….

9. Which of the following types of website is most important to you? (You can tick more than one box)

Banking ☐	Shopping ☐	Holidays ☐
Travel information ☐	Entertainment ☐	News ☐
Local services ☐	Sport ☐	Academic study ☐
Public services ☐	Business sites ☐	Chat rooms ☐

Other, (Please indicate)…….

Section (3): Public E-services

1. Have you ever visited any of the government websites?

Yes ☐

No ☐ If no, please go to question 9

2. If yes, which website(s) do you use most often?

……

3. How often do you visit these web sites?

Once a month ☐

Weekly ☐

Daily ☐

Other (please indicate) **……**☐**……..**

4. What do you think are the reasons for which you use government website? (Please choose all that apply)

Searching for information ☐

Submitting online application form☐

Downloading documents ☐

Making payment online ☐

Using some e-public services ☐

Other (please indicate) **……**☐**……..**

5. Have you ever used any of the e-services available on any of the government websites?

Yes ☐

No ☐ If no, please go to question 10

6. Please indicate which one(s) have you tried.?

……..

7. How long have you been using these services?

Less than a year ☐

From 1 to 2 years ☐

More than 2 years ☐

8. How did you become aware of the government websites and/or e-government services? (you can tick more than one box)

Through a search engine ☐

Linked to it through other websites ☐

Through word of mouth ☐

Through post ☐

Through TV ☐

Other, (Please indicate)……. ☐

Please go to question 12

9. If you have never visited any of the government websites, what is the main reason?

I did not know that the government has websites ☐

I have a negative attitude against them ☐

I prefer the personal interaction ☐

I believe I don't need them ☐

Other, (Please indicate)……. ☐

10. If you have never used any of the e-services available on any of the government websites, what is the main reason?

I had no need to access these services ☐

I didn't know about the services/ information offered ☐

I don't trust the electronic transactions ☐

I prefer the traditional way of providing the service ☐

I don't know how to use the e-service ☐

Other (Please indicate)…… ☐

11. If there was a website where you could find public services all in one online place, would you use it? Examples of public services may include payment for car tax, income tax, local school information and congestion charging.

Yes ☐

No ☐

I don't know ☐

12. Do you know about government services that can be accessed through non-internet based e-channels? E.g. automated telephony, kiosks, interactive digital television or short messaging service.

Yes ☐

No ☐ if no, please go to question number 16

13. Have you ever tried any government services accessed through non-internet based e-channels?

Yes ☐

No ☐ if no, please go to question number 16

14. Please indicate which one you have tried
……

15. In your opinion, which of the following do you consider the most important advantage(s) of these e-channels? (Please choose all that apply)

They offer more freedom of mobility ☐

They are much more convenient to use ☐

They offer more control over daily life activities ☐

They are more efficient (time and effort wise) ☐

They are better than interpersonal alternative ☐

They solve intensified needs ☐

Other, (Please indicate)……. ☐

Please go to question number 17

16. If you have never tried any non-internet based government services, what is the main reason?

I didn't know about these e-channels and their services ☐

I don't think they are efficient ☐

They are less secure than personal contact ☐

I had no need to access these services ☐

I don't know how to use them ☐

I don't like to experiment with new technology ☐

Other (Please indicate)…….. ☐

17. How do you rate government's electronic services overall?

Exceptional ☐

Exceeds expectations ☐

Meets expectations ☐

Improvement needed ☐

Unsatisfactory ☐

Section (4): Barriers

The following statements describe problems that could hinder e-service development in the public sector. Please rate each statement on a scale from "not a problem" to "extreme problem"

Statement	Not a problem	Minor problem	Major problem	Extreme problem	I don't know
Lack of suitable legal framework/ Unsuitable legislations					
Lack of potential will and leadership					
Lack of skills amongst public sector staff					
Lack of competitive pressures forcing change					
Lack of vision and strategy					
Multi-lingual/ multi-cultural issues					
Lack of awareness/ information					
Lack of organisational coordination among public sector organisations/ departments					
Lack of partner readiness and cooperation					
Lack of transparency					
Lack of innovation incentives in public sector organisations					
Old structure and processes in public sector organisations					
Resistance to change (staff and citizens)					
Security and privacy issues					
Poor technological infrastructure					
Lack of citizen trust					
High technology set-up cost					

High technology competence (Inability to keep up with rapidly changing technology)					
Accessibility issues					
Opposition by professional or union interests					
Absence of an E-government champion					
General negative attitude against E-service					
Lack of recognition of organisational change rather than technical change					
Government's reluctance for citizens involvement					
Lack of e-communications with all constituents for e-service delivery					
Corruption					
E-literacy					
Digital divide					
Inactive citizens' participation					
Lack of financial resources					
Changing of the culture					
Conflicting priorities of organisations					
High service user cost and cost justification issues					
Complexity of required policies					
Poor organisational infrastructure					
Unreliable internet connections					
Lack of standards for quality, design of websites/portals					
Lack of expert assistance					
Lack of e-government applications					
Lack of methods for productivity and					

progress monitoring and accountability					
Lack of management support					
Difficulty in re-engineering of internal processes					
Insufficient user authentication methods					
Lack of technological standards					
An Agency-centric rather than a Customer-centric					
Resistance to technology adoption					
Difficulties in interoperability with installed IT systems					
People are not interested in e-government service					
People do not view e-service as a high priority					
People do not have the computers, software, or other necessary equipment					

THANK YOU VERY MUCH FOR YOUR HIGHLY APPRECIATED COOPERATION

A.3 Surveys' Results

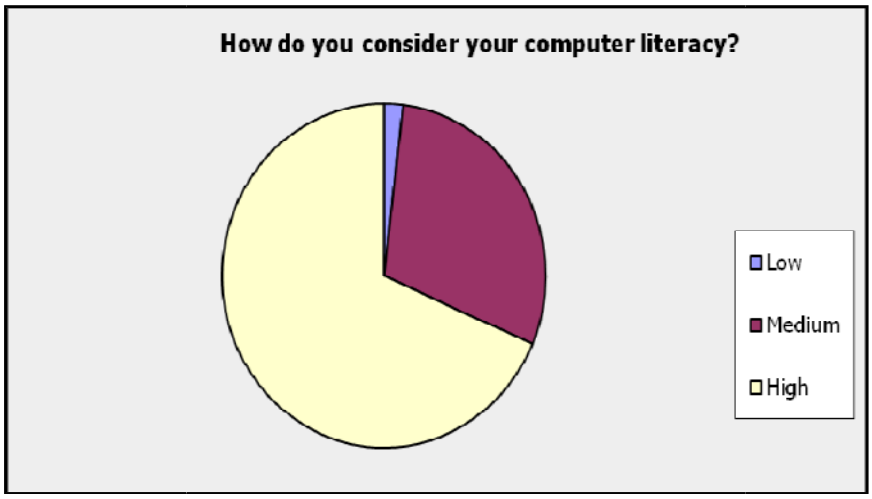
Using simple descriptive statistics and frequency distribution to analyse the data collected from the pilot surveys reveal the following results:

1) From the citizens survey

- Participants background

The majority of respondents aged between 31-45 (63%), were males (74.1%), had a post graduate qualification (81.5%), were employed (42.6%), their average annual income ranged between £10-£15K (38.9%), and considered their computer literacy[1] to be high (68.5%).

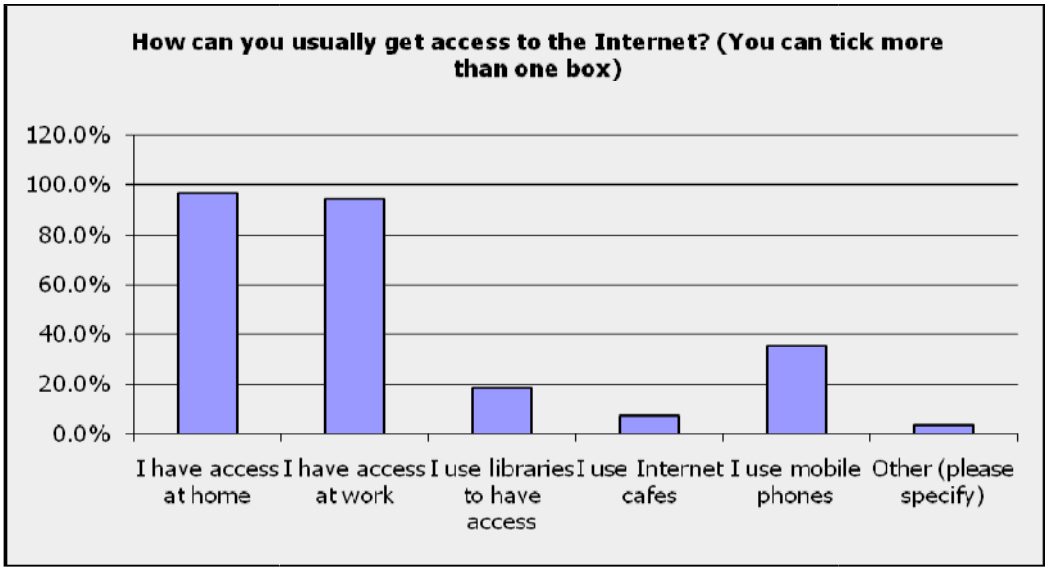
[1]Exhibit 1: Citizens' computer literacy



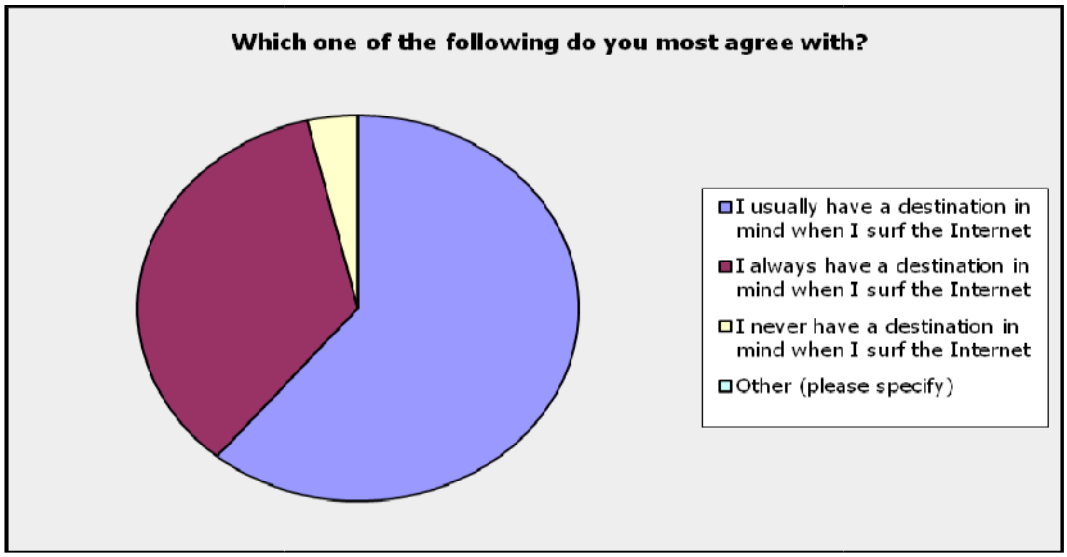
- Participants' use of the internet

All respondents indicated their agreement that the Internet is necessary for their life (100%), that they have regular access to the internet (100%), and that they access the Internet on daily basis (100%). The majority indicated that they have a ***broadband*** Internet connection (87%), they have access[2] to the Internet ***at home*** (96.3%) and ***at work*** (94.4%), and that they ***usually*** have a destination[3] in mind when they surf the Internet.

[2]Exhibit 2: Citizens' frequency in accessing the Internet



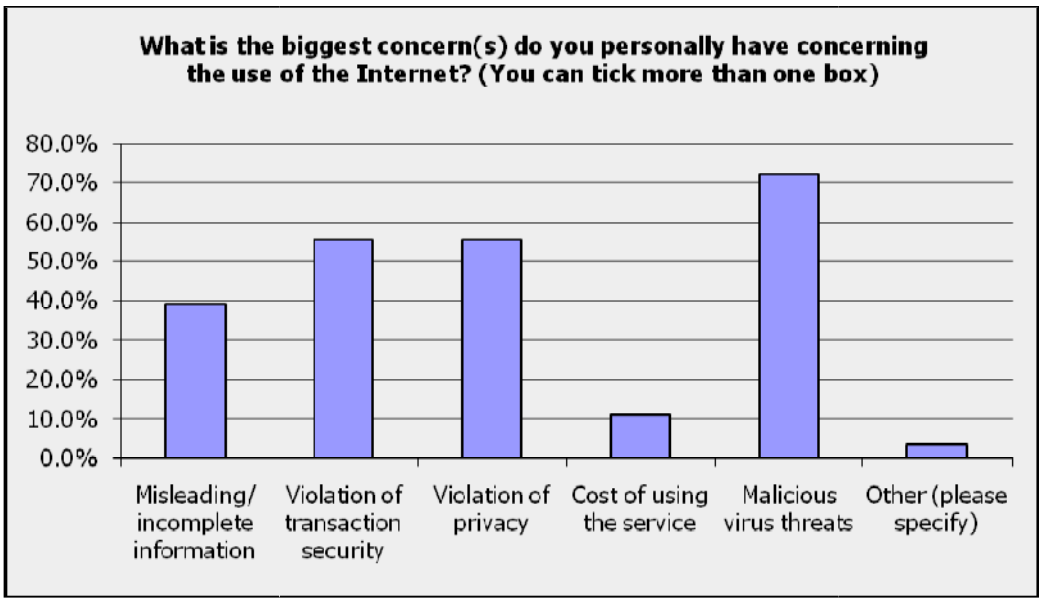
[3]Exhibit 3: Citizens' attitude in accessing the Internet



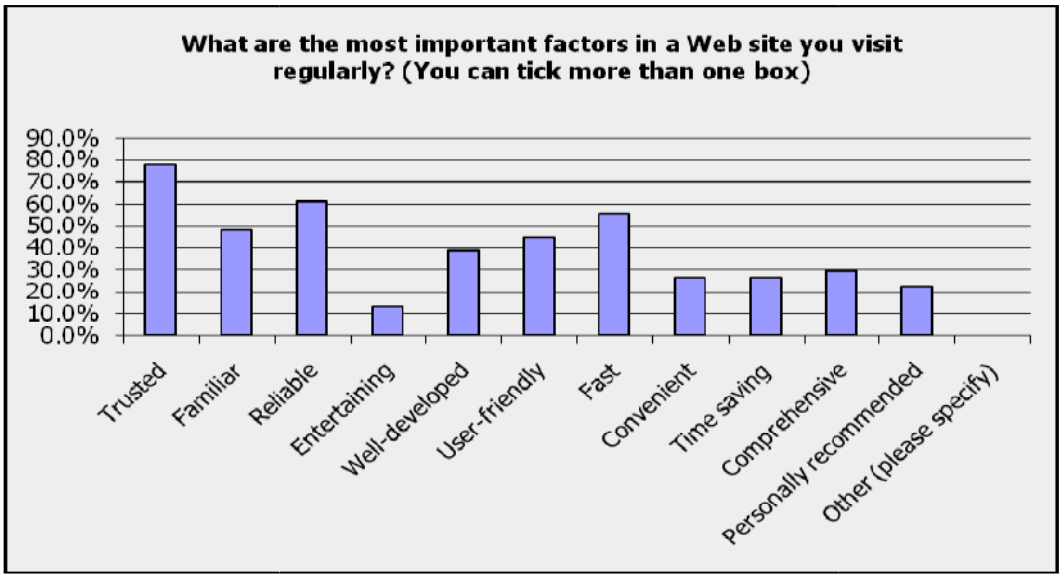
The majority of respondents indicated that they visit 10 or more websites on a regular basis (29.6%), that malicious virus threats are their biggest concern[4] when they use the Internet (72.2%) followed by violation of security (55.6%) and violation of privacy (55.6%). Respondents also indicated that being a trusted website is the most important factor[5] in the site the use (77.8%) followed by being reliable (61.1%) and fast (55.6%).

Finally, the majority of responses indicated that banking is the most important type of website[6] to respondents (77.8%) followed by academic study (75.9%) and news (74.1%).

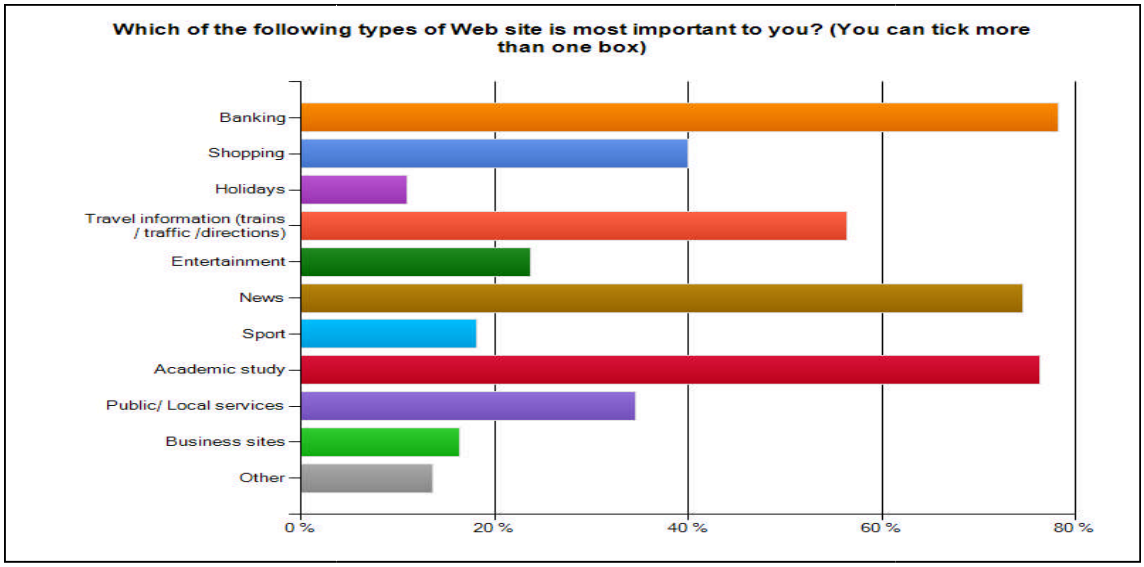
[4]Exhibit 4: Citizens' biggest concerns when using the Internet



[5]Exhibit 5: Most important factors in the website



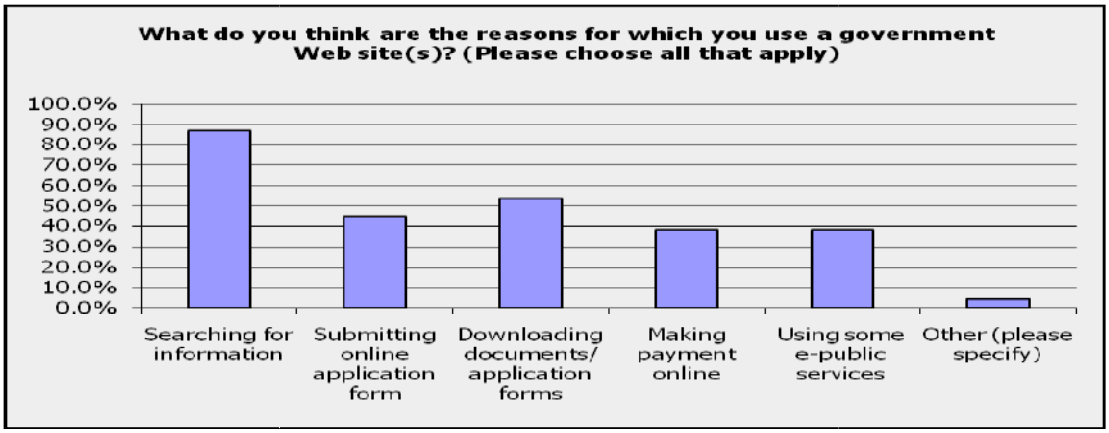
[6]Exhibit 6: Most important website types



- Public E-Services

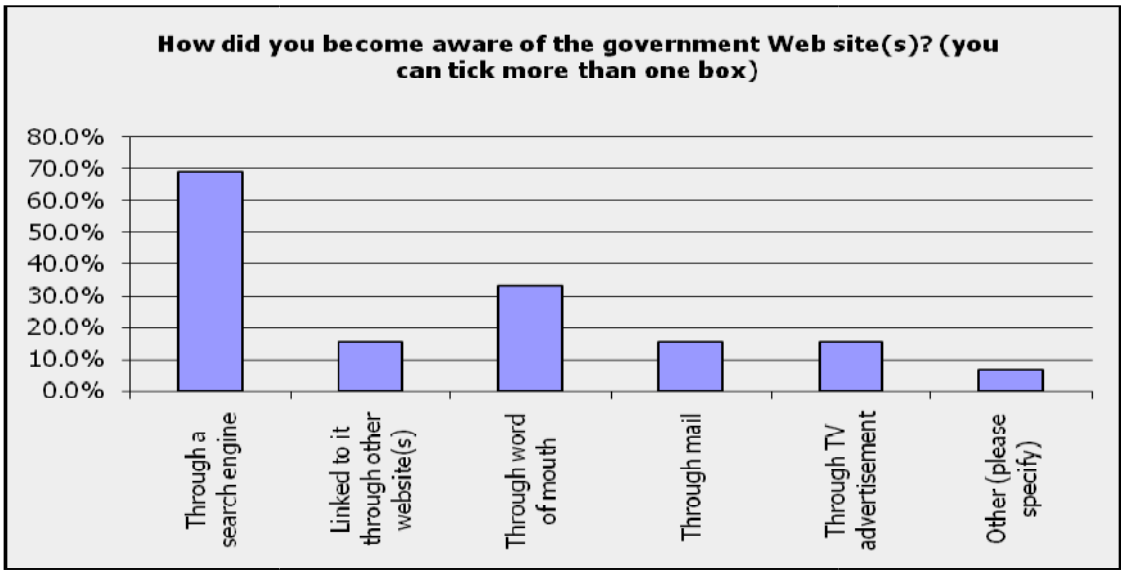
When respondents were asked if they had ever visited a governmental website, the majority's answer was ***yes*** (85.2%). The majority also indicated that they visit governmental website only ***when needed*** (62.2%). The common reasons for visiting governmental websites[7] were searching for information (86.7%) followed by ***downloading documents and application forms*** (53.3%) and **submitting online application forms** (44.4%).

[7]Exhibit 7: Common reasons for visiting governmental websites



With regard to respondents' (citizens') awareness[8] of the governmental e-services and websites, the majority indicated that they became aware of these websites through ***search engines*** (68.9%) followed by ***word of mouth*** (33.3%), ***TV advertisement*** (15.6%), ***mail shots*** (15.6%), and ***links through other websites*** (15.6%).

[8]Exhibit 8: Citizens' awareness of governmental e-services and websites

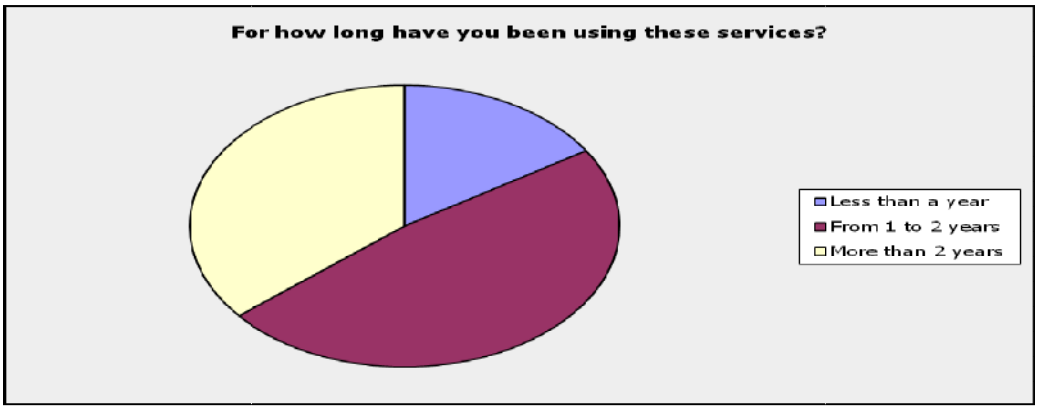


With regard to respondents' actual usage of governmental websites to obtain a service, 55.6% stated that they have obtained services through using governmental websites. The range of services obtained included:

- vehicle licensing
- local schools- childcare
- journey planning
- visa renewal
- getting information
- downloading documents
- paying car road tax.
- TV licence
- job application
- paying electricity bill
- checking and paying traffic fines

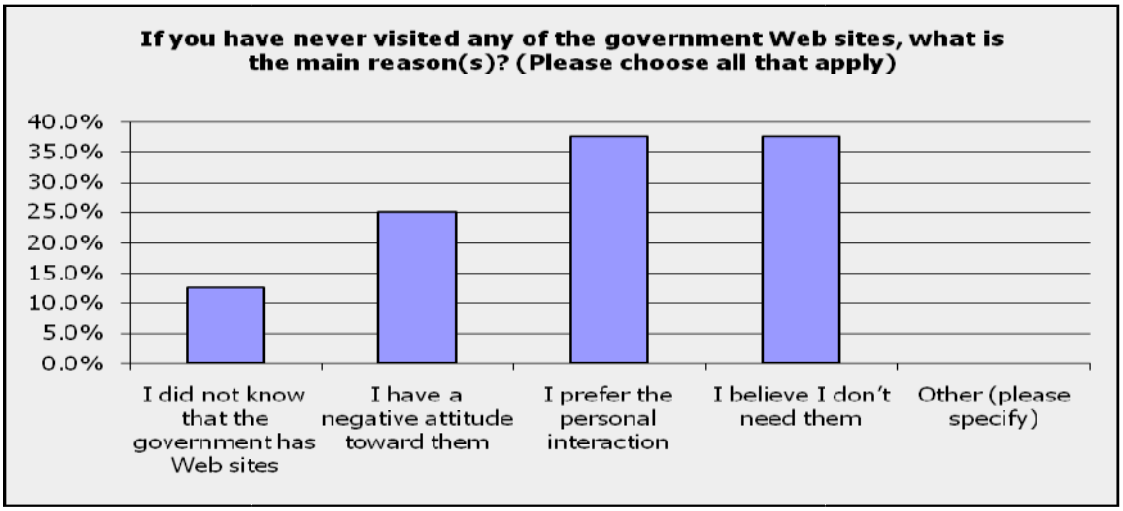
Almost half the respondents indicated that they have been using[9] government websites for ***about 1-2 years*** (48%), followed by ***more than 2 years*** (36%), and ***less than one year*** (16%).

[9]Exhibit 9: The period citizens have been using governmental websites



For those citizens who indicated that they never used governmental websites, they were asked about their reasons for not making use of such facilities[10]. The majority of responses indicated that their main reason was ***they didn't need them*** (37.5%), followed by ***preferring the personal interactions*** (37.5%), ***having a negative attitude towards governmental website*** (25%), and ***not knowing that there are governmental websites*** (15.2%).

[10]Exhibit 10: Reasons for not using e-services on governmental websites

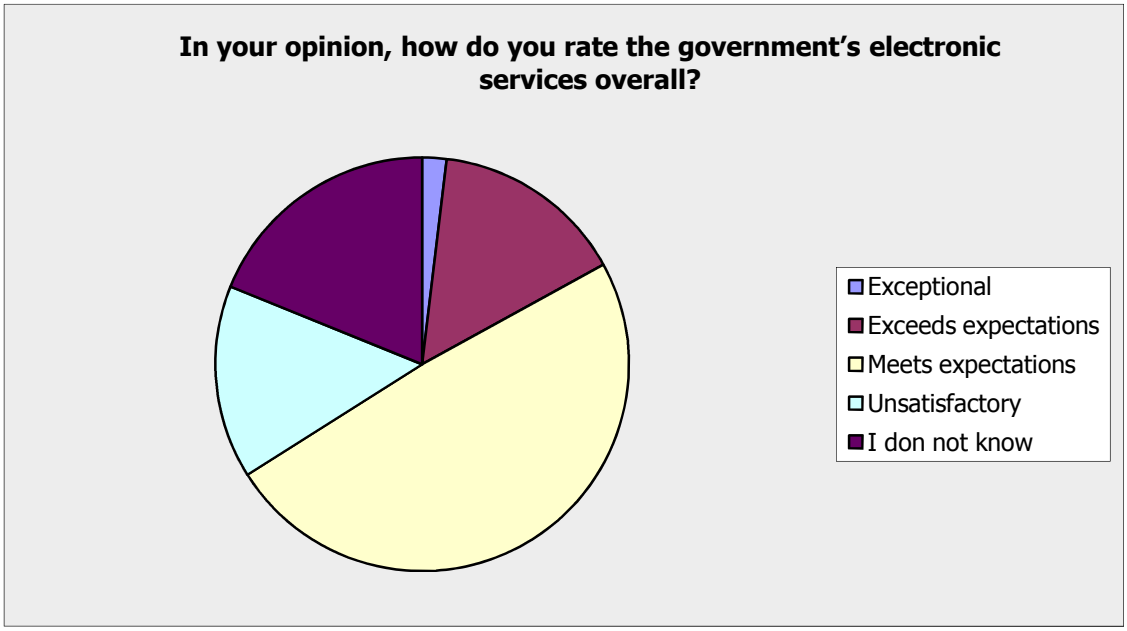


Additionally, the majority (69.8%) of citizens' responses indicated that ***they have not used*** other forms of e-governmental services such as automated telephony, interactive kiosks, interactive television services, and SMS text messaging. The reasons for not using such non-Internet services were: ***not knowing about these channels and systems*** (56.8%), ***there was no need to access these services*** (35.1%), and ***not knowing how to use them*** (13.5%).

However, the remaining proportion who indicated using these other forms of e-governmental services (30.2%) have mainly used ***automated phone systems*** (81.3%), followed by ***SMS short text messaging systems*** (31.3%), ***interactive kiosks*** (25%), and ***fax*** (6.3%). This proportion thought that the most important advantages of these e-governmental service channels were ***much more convenient to use*** (56.3%), ***more efficient*** in terms of time and effort (50%), and ***offering freedom of mobility*** (37.5%).

When the survey respondents were asked about their evaluation of the overall electronic governmental services[11], the majority have thought it ***meets their expectations*** (49.1%).

[11]Exhibit 11: Citizens overall evaluation of governmental e-services



With regard to the citizens' evaluation of the barriers to e-government service implementation, the following tables summarise respondents' views in relation to five types of barriers, namely:

1. Resistance barriers;
2. Technical barriers;
3. Administrative barriers;
4. Privacy barriers; and
5. Cultural barriers.

Table 1: Citizens' evaluation of resistance barriers

1. Resistance barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
Resistance to change by citizens	8.0%	32.0%	**36.0%**	12.0%	12.0%
Government's opposition for citizens involvement	16.0%	**28.0%**	**28.0%**	8.0%	20.0%
Resistance to technology adoption	10.0%	**32.0%**	28.0%	18.0%	12.0%

As the shaded cells in the previous table depict, the majority of respondents thought that ***resistance to change by the citizens*** would be a major problem in implementing e-government services (36%). Additionally, ***government's opposition for citizen involvement*** was perceived as a minor problem by 28% of respondents, while also perceived as a major problem by 28%. With regard to ***resistance to technology adoption***, the majority of responses thought that this issue would be a minor problem in implementing e-government services.

Table 2: Citizens' evaluation of technical barriers

2. Technical barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
Lack of secure electronic identification and authentication	2.0%	22.0%	**38.0%**	28.0%	10.0%
Low levels of Internet use amongst certain groups	4.0%	24.0%	**48.0%**	14.0%	10.0%
Low ICT skills among citizens	4.0%	32.0%	**42.0%**	10.0%	12.0%
Low ICT skills among government officials	12.0%	18.0%	**32.0%**	22.0%	16.0%
High service user cost	22.0%	**36.0%**	24.0%	4.0%	14.0%

In relation to the technical barriers, the previous table shows that the majority of citizens thought that each of the following concerns would form a major problem in implementing e-government services:

- Lack of secure electronic identification and authentication;
- Low levels of Internet use amongst certain groups;
- Low ICT skills among citizens;
- Low ICT skills among government officials.

On the other hand, the majority of respondents believed that the high cost would form a minor problem.

As for the administrative barriers, table 3 shows that the majority of respondents thought that all three concerns would be minor problems as barriers to implementing e-government services.

Table 3: Citizens' evaluation of administrative barriers

3. Administrative barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
E-service applications are few	22.0%	**28.0%**	24.0%	2.0%	24.0%
E-service applications are difficult to use	14.0%	**46.0%**	18.0%	8.0%	14.0%
The multitude of languages/ cultures within the country	28.0%	**40.0%**	16.0%	0.0%	16.0%

The majority of respondents thought that privacy concerns would be either ***major*** or ***extreme*** problems in implementing e-government services as the following table illustrates.

Table 4: Citizens' evaluation of privacy barriers

4. Privacy barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
Concerns over potential for online theft and fraud	0.0%	10.0%	**44.0%**	40.0%	6.0%
Perception of risks to privacy and civil liberties	2.0%	20.0%	32.0%	**36.0%**	10.0%

With regard to the last group of barriers, i.e. cultural barriers, table 5 shows that the majority of respondents believed that all concerns of cultural barriers would form major problems in implementing e-governmental services.

Table 5: Citizens' evaluation of cultural barriers

5. Cultural barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
Lack of awareness/ information	2.0%	24.0%	**44.0%**	26.0%	4.0%
Inactive citizens' participation	0.0%	**34.0%**	**34.0%**	20.0%	12.0%
General negative attitude toward e-services	14.0%	32.0%	**36.0%**	10.0%	8.0%
Citizens lack motivations to use e-services	6.0%	36.0%	**46.0%**	8.0%	4.0%
Accessibility problems for the visually impaired and others with disabilities	4.0%	26.0%	**40.0%**	14.0%	16.0%

2) From the employees survey

Analogous to the citizens' survey, the researcher has conducted a pilot survey directed at the employees working in the IT and IS sectors to assess the ability of the research questions to measure what they are supposed to measure in relation to the research purpose and objectives.

Accordingly, the results that emerged from the employees survey indicated the following:

- Participants background

The age distribution of participants ranged from 18 to over 65 years old. The majority fall into two categories, namely, 23-30 years old (40%), and 31-45 years old (40%). 60% of the participants in this survey were males, and 53.3% of all participants considered their computer literacy to be high. Also, the majority indicated that they work in full-time employment (80%), for a

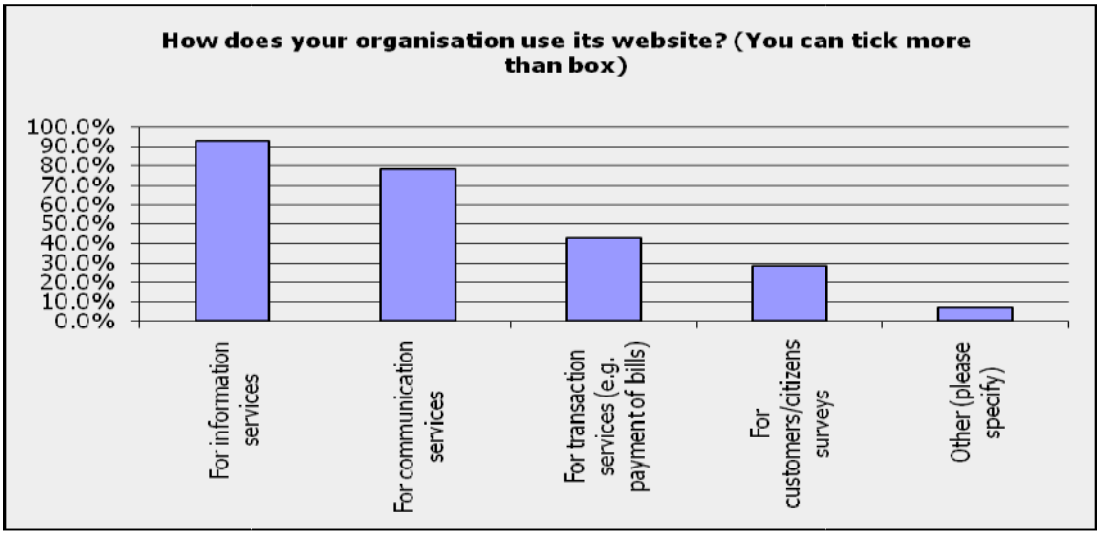
period ranging between 1-5 years (40%), and more than 10 years (26.7%) and their roles in their organisations included:

- Risk Data/Systems Analyst;
- Product engineer;
- Student affairs;
- Human Resources Manager;
- Network Engineer;
- Member of a support team;
- Head of cash;
- Customer service clerk; and

- Organisations background

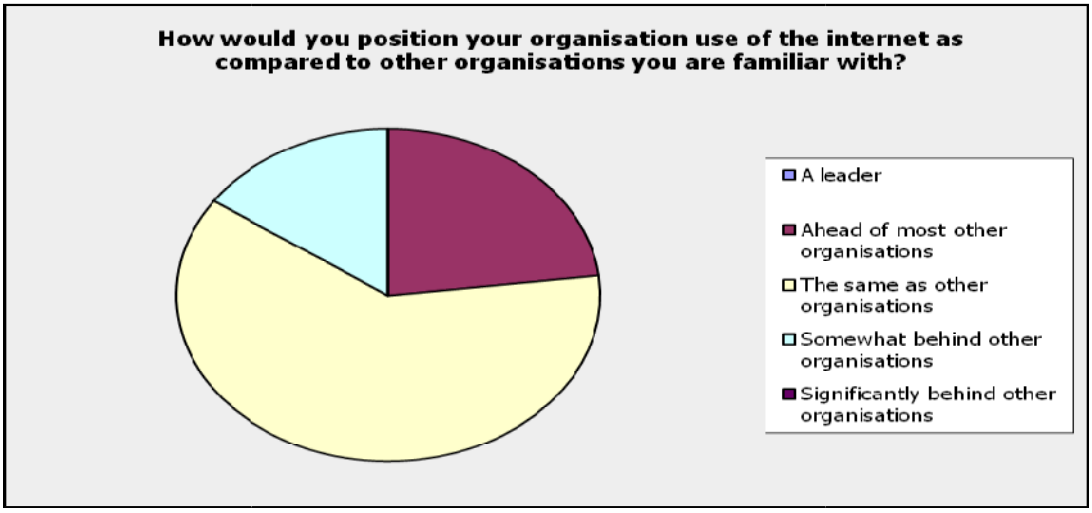
With regard to the background of the participants' organisations, the majority were privately owned organisations (60%), and publicly owned (26.7%). 66.7% of the organisations had over 250 employees, and 46.7% had over 10,000 customers. Additionally, 93.3% of all participants' organisations had their own website. With regard to the organisation's use of the website[12], the majority used websites for ***informational*** (92.9%) and ***communication*** (78.6%) purposes.

[12]Exhibit 12: Organisations' use of their websites

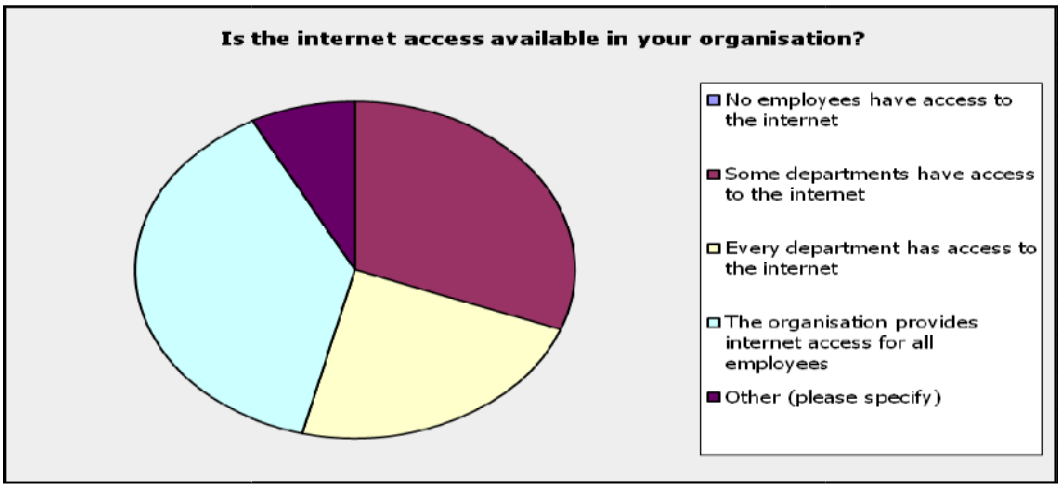


The majority (92.9%) indicated that their organisations ***provide e-services*** through their WebPages, for a ***period of 1-5 years*** (46.2%), and ***for 6-10 years*** (23.1%), or ***less than 1 year*** (15.4%). Additionally, the majority of respondents perceived their organisations' use of the Internet[12] to be ***the same as other organisations*** (61.5%), or ***ahead of most other organisations*** (23.1%). Also, the majority of responses indicated that ***every employee has access to a PC*** (69.2%) with ***Internet access by all employees***[14] (38.5%).

[13]Exhibit 13: Organisation's use of the internet in comparison to other organisations



[14]Exhibit 14: Employees' access to the Internet at work



When respondents were asked to rate their perceptions of the success of the e-service project undertaken by their organisations on a scale of 1-5 where 1 is very successful, and 5 is very unsuccessful, the majority of answers thought that the e-service project was ***successful*** (46.2%).

- Governing enablers of e-service implementation

Table 6: Employees' evaluation of vision as an e-service enabler

1. Vision						
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**I don't know**
My organisation has a clear, comprehensive vision to implement e-service	0.0%	8.3%	0.0%	**58.3%**	25.0%	8.3%
My organisation's vision effectively encourages employee's commitment to e-service implementation	8.3%	8.3%	8.3%	**50.0%**	25.0%	0.0%
My organisation's vision is well understood among employees in terms of e-service	0.0%	18.2%	36.4%	**45.5%**	0.0%	0.0%

Table 7: Employees' evaluation of strategy as an e-service enabler

2. Strategy						
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**I don't know**
My organisation defined formal methods and processes for establishing e-service strategies	0.0%	0.0%	16.7%	**66.7%**	8.3%	8.3%
My organisation is ready for e-service in social and technical terms	7.7%	7.7%	7.7%	**53.8%**	23.1%	0.0%
My organisation has clear goals and objectives for e-service projects	0.0%	0.0%	8.3%	**66.7%**	8.3%	16.7%

Table 8: Employees' evaluation of top management as an e-service enabler

3. Top management						
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**I don't know**
Top management encourages and participates in e-service implementation	0.0%	0.0%	16.7%	**50.0%**	25.0%	8.3%
E-service is a priority for the top management	7.7%	15.4%	7.7%	**46.2%**	15.4%	7.7%
Top management is active in allocating human resources for e-services	0.0%	0.0%	**41.7%**	33.3%	16.7%	8.3%

Table 9: Employees' evaluation of funding as an e-service enabler

4. Funding						
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**I don't know**
My organisation suffers from lack of funds for e-service projects	16.7%	**25.0%**	16.7%	0.0%	16.7%	**25.0%**
My organisation considers providing e-service as a long term investment	7.7%	15.4%	7.7%	38.5%	15.4%	15.4%

Table 10: Employees' evaluation of customer centrism as an e-service enabler

5. Customer Centrism						
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**I don't know**
My organisation is implementing e-services as "customer-centric" projects	0.0%	0.0%	25.0%	**41.7%**	8.3%	25.0%
Customer/Citizens' participation and involvement is active regarding e-service implementation	7.7%	7.7%	**38.5%**	**38.5%**	0.0%	7.7%

- Barriers of e-service implementation

Table 11: Employees' evaluation of political barriers of e-service implementation

1. Political barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
Lack of potential will	16.7%	**50.0%**	16.7%	8.3%	8.3%
Lack of vision and strategy	**53.8%**	15.4%	15.4%	7.7%	7.7%
Absence of detailed policy	**25.0%**	**25.0%**	**25.0%**	8.3%	16.7%
Lack of management support	**50.0%**	16.7%	8.3%	16.7%	8.3%

Table 12: Employees' evaluation of organisational barriers of e-service implementation

2. Organisational barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
Poor organisational infrastructure	25.0%	**33.3%**	8.3%	25.0%	8.3%
Lack of organisational coordination	16.7%	**33.3%**	**33.3%**	8.3%	8.3%
Lack of innovation incentives	23.1%	15.4%	**38.5%**	7.7%	15.4%
Resistance to change (staff)	25.0%	**33.3%**	8.3%	25.0%	8.3%
Difficulty in re-engineering of internal processes	16.7%	25.0%	16.7%	**33.3%**	8.3%

Table 13: Employees' evaluation of resource barriers of e-service implementation

3. Resource barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
Lack of skills amongst staff	**33.3%**	25.0%	25.0%	8.3%	8.3%
Lack of financial resources	**38.5%**	30.8%	7.7%	15.4%	7.7%

Table 14: Employees' evaluation of technological barriers of e-service implementation

4. Technological barriers					
	Not a problem	**Minor problem**	**Major problem**	**Extreme problem**	**I do not know**
Poor technological infrastructure	**33.3%**	25.0%	**33.3%**	0.0%	8.3%
Security and privacy problems	25.0%	8.3%	**41.7%**	16.7%	8.3%
High technology set-up cost	**33.3%**	16.7%	**33.3%**	8.3%	8.3%
Unreliable Internet connections	**50.0%**	0.0%	25.0%	16.7%	8.3%
Lack of technological standards	**46.2%**	15.4%	15.4%	15.4%	7.7%
Lack of secure electronic identification and authentication	33.3%	8.3%	**50.0%**	0.0%	8.3%

Appendix B Interview Questions and Individual Information Sheet

B.1 Interview Questions (English version)

I am very grateful you kindly agree to take part in this interview. My research is aimed at exploring the issue of “electronic service” and the extent to which it is assisting the Egyptian government in cutting red tape and enhancing the efficiency and effectiveness of their public services. The required time to conduct this interview will take approximately 90 minutes.

I would like to confirm that all information, names gathered from the interview will be kept confidential and the researcher is responsible for confidentiality.

The major topics to be discussed during this interview are as follows:

- The previous and current work experience and roles of the interviewee.
- Perception of interviewee of e-government program and its objectives in Egypt.
- The interviewee’s opinion about main barriers and challenges of e-service development in the Egyptian government. Particularly, the barriers related to political, organisational, resources, cultural, legislative, regulatory and technological aspects
- The interviewee’s view on how and why these barriers are occurring, and how they can be overcome.
- The factors that motivate development, the motives and benefits which can make the most gain of the e-service projects.
- Suggestions and future plans for future planning of e-service in the Egyptian government.

Thank you very much once again for your participation and cooperation.

- First, please tell me briefly about your current and previous work experience and roles, regarding e-service development in the Egyptian e-government program.
- Could you give me a brief description about the e-service project you are involved in (if applicable) and what was the idea behind the project?
- In your own words, what is your definition of e-government, e-service?
- In your perception, what should the main objectives/goals of e-service in Egypt be?
- In your opinion, what are the main barriers of e-service development and or implementation? In other words, according to your knowledge, what are the problems that could be encountered during an e-service project implementation? I mean the barriers that could stop these projects,
- Starting with the political barriers, what is your opinion about various political topics such as; political will, top management support and commitment, having a clear vision and strategy?
- In literature, one of the important elements for e-service development in public organisations is the strong political will, along with having a clear vision and strategy. How do you perceive these in Egypt?
- Strong will and commitment is a necessary element for e-service development. Do you agree? Could you please explain your perception in this regard?
- Is there any reluctance from policy makers from the increased citizens' participation resulting from the introduction of electronic services?
- Could you please talk about the main administrative barriers based on the current situation in Egypt? For example, is there any conflict in priorities among departments in the same organisation or even among ministries in the government? What else?
- How do you perceive the resources (financial and human) barriers for e-service development? How do you identify the human and financial resources barriers for this purpose?
- What about cultural barriers? How do you perceive the readiness of citizens from the cultural point of view? Have you come across any people who resist

e-service development in Egypt? Do you feel that people are keen to obtain the governmental services using these new channels?

- What about legislative and regulatory barriers? How do you perceive legal and security barriers?
- Is there a willingness to change the laws that are not commensurate with the introduction of e-services?
- What about technological barriers? How do you perceive the technological infrastructures and subjects such as digital gap, access, and connectivity?
- What could the solutions for these barriers be? What is the government's role to overcome these barriers in your opinion?
- Based on your experience, what are the strategies for the coming period and the future plans for the programs? What's your preferred scenario for e-service development in the Egyptian government? What are the priorities?
- In your opinion, how should a preferred scenario be planned? How can these suggestions be achieved? Would you recommend any special model or action plan for the successful development of e-service in the public sector?
- Is there anything else that you would like to add in this regard?

Thank you very much for your participation in this interview.

B.2 Interview Question (Arabic Version)

أولا، أود أن أشكركم على مشاركتكم فى هذه المقابلة الشخصية.،هذه المقابلة الشخصية جزء من البحث الذى يقوم بدراسة العوامل إما التى تعيق أو التى تحفز تطوير الخدمات الإلكترونية فى الحكومة المصرية.

تتصف المقابلة الشخصية بالمواصفات التالية:

1) الوقت اللازم لإجراء هذه المقابلة سيستغرق حوالى 90 دقيقة.

2) جميع المعلومات و الأسماء التى تم جمعها سوف تبقى سرية و الباحث هو المسئول عن هذه السرية.

الموضوعات الرئيسية التى ستناقش خلال هذة المقابلة:

- خبرات العمل السابقة و الحالية لكل من تتم مقابلته
- مفهوم الحكومة الإلكترونيه و أهدافها فى مصر من وجهة نظر كل من المشاركين.
- آراء المشاركين حول العوائق و التحديات الرئيسية لتطوير الخدمات الإلكترونية فى الحكومة المصرية من مختلف الجوانب: السياسية، الإدارية، الإقتصادية، الثقافية، التشريعية، التنظيمية و التكتنولوجية، إلى جانب مناقشة متعمقة حول كيف و لماذا تظهر هذه المعوقات.
- كيف ولماذا تحدث هذه العوائق ، وكيف يمكن التغلب عليها.
- القوى الدافعة وراء تطوير الخدمات الإلكترونية, و العوامل التي تدفع التنمية ، والدوافع والفوائد التي يمكن أن تعظم المكاسب من مشاريع الخدمات الإلكترونية.
- الأولويات و الإستراتيجيات التى يمكن أن تقدم أكبر قدر من التقدم فى مجال تطوير الخدمات الإلكترونية.
- الإقتراحات و خطط العمل المستقبليه لتطوير الخدمات الإلكترونية فى الحكومة المصرية.

مرة أخرى أشكركم شكرا جزيلا على تعاونكم

تبدأ المقابلة بشرح موجز للنقاط الرئيسية بما فى ذلك أهداف البحث، الهدف من المقابلة، الوقت المقدر لإجراء المقابلة، سرية المعلومات المقدمة و التأكيد على الدور الرئيسى لوجهات نظر المشاركين.

الإطار العام لموضوعات المقابلة الشخصية:

- خلال المقابلة، سوف تتم مناقشة مختلف التحديات التى تواجه تطوير الخدمات الإلكترونية فى الحكومة المصرية. أولا، هل يمكن أن تخبرنا بإختصار عن خبراتك فى العمل السابقة و الحالية و الدور الذى تلعبه فى تطوير تكنولوجيا المعلومات و الخدمات الإلكترونية فى مصر.
- ما هو مفهوم الحكومة الإلكترونية فى رأيك؟ الخدمات الإلكترونية؟
- ما هو تصورك بشأن الأهداف الرئيسية للخدمات الإلكترونية فى مصر؟
- فى رأيك، و بحسب مشاركتك فى تطوير الخدمات الإلكترونية فى الحكومة المصرية ، ما هى العقبات الرئيسية أمام هذا التطوير؟ و بعبارة أخرى، بالنظر فى العديد من المشاكل و التحديات التى تواجه التحول من تقديم الخدمات التقليدية إلى خدمات إلكترونية فعالة، على حد علمك، كيف تتصور هذة العوائق فى جهات مختلفة فى مصر؟
- نبدأ مع القضايا السياسية (مناقشة مختلف القضايا مثل الإرادة السياسية، و دعم الإدارة العليا و الإلتزام، و وجود استراتيجية و رؤية واضحة)
- أحد العناصر الهامة لتطوير الخدمات الإلكترونية في المؤسسات العامة هو إرادة سياسية قوية ، إلى جانب وجود رؤية واستراتيجية واضحتين. كيف تتصور هذه العناصر فى مصر؟
- الإرادة السياسية القوية والالتزام يشكل عنصرا ضروريا لتطوير الخدمات الإلكترونية. هل توافقون على ذلك؟ أرجو شرح التصور الخاص بك في هذا الصدد؟
- نقاش حول أهم العقبات التنظيمية (الهيكلية والإدارية)مع الأخذ بالإعتبارالبنية التحتية الإدارية الحالية في مصر.
- ما هو تصورك بشأن الحواجز التنظيمية والإدارية لتطوير الخدمات الإلكترونية؟
- وماذا عن الموارد (المالية والبشرية)؟ كيف يمكن تحديد العوائق البشرية والمالية لهذا الغرض؟
- ماذا عن العوائق الثقافية؟
- ماذا عن العوائق التشريعية والتنظيمية؟
- ماذا عن العوائق التكنولوجية؟
- ما هو تصورك بشأن الهياكل الأساسية التكنولوجية وأمور مثل الفجوة الرقمية ، والاتصال؟

- كيف تتصور مدى استعداد المواطنين من الناحية الثقافية والحضارية؟ وإلى جانب العديد من التساؤلات في مناقشات متعمقة حول كيفية وأسباب حدوث هذه العوائق اعتمادا على الخبرات والمعارف لدى كل من المشاركين.
- هل واجهتم أي هؤلاء الذين لا يتفقون مع تطوير الخدمات الإلكترونية في مصر؟ على سبيل المثال ، من الموظفين أو المديرين الذين يعتقدون أن التجارة الإلكترونية هي مدمرة لخدمة المنظمة. إذا كان الجواب نعم ، فما هي الأسباب في رأيك؟ كيف تبرر هذه الفكرة؟
- هل تعتقد أن هناك أي مشكلة تتعلق بالخدمات الإلكترونية من جانب المواطن ؟ إذا كانت الإجابة بنعم ، ما هي في رأيك؟
- ما هو تصورك بشأن العوائق الامنية والقضائية؟
- ما هو تقييمكم لمجلس النواب أو أي سلطة تشريعية في هذا الصدد؟
- هل يمكنك أن تذكر رأيك فى نقاط القوة والضعف والفرص والتهديدات لعملية تطوير الخدمات الإلكترونية في الحكومة المصرية ؟ من سياسية واجتماعية واقتصادية ، والجوانب التكنولوجية؟
- فى ظل خلفيتك حول ماهية الدوافع ، ما هى الدوافع الخاصة بك للمشاركة في تقديم الخدمة الإلكترونية؟
- ما هو تصورك بشأن دوافع أصحاب المصلحة الآخرين؟ ما الذي يجعلهم يشاركون في مجال التجارة الإلكترونية؟ (مناقشة)
- وبناء على ما تتمتعون به من خبرة ، ما هو السيناريو المفضل لديك لتطوير الخدمات الإلكترونية في القطاع العام المصري؟ ما هي الأولويات؟
- في رأيك ، كيف ينبغي أن يكون التخطيط لهذا السيناريو المفضل؟ كيف يمكن أن تتحقق هذه الاقتراحات؟ هل تقترح أي نموذج خاص أو خطة العمل للنجاح في تطوير الخدمات الإلكترونية في القطاع العام؟
- هل هناك أي شيء آخر كنت تود أن تضيفه في هذا الصدد؟

شكرا جزيلا على مشاركتكم في هذا اللقاء.

B.3 Individual Information Sheet

First name	Surname	Date

Education qualifications:

Bachelor degree ☐ Masters degree ☐ PhD ☐

Field and subject:

Current position:

	Position title	No. of years	Organisation
1			
2			
3			

Do you agree to participate in this interview? Yes ☐ No ☐

Could you please give your postal address e-mail address and phone number

Postal address:

Contact No:

Email address:

Can you recommend other qualified persons to participate in this interview?

Yes ☐ No ☐

If yes, please give the information below:

1- Name: Surname:

Position and organisation: Contact No:

Address:

2- Name: Surname:

Position and organisation: Contact No:

Address:

First name	Surname	Date

Education qualifications:

Bachelor degree □ Master degree □ PhD □

Field and subject:

Current position:

	Position title	No. of years	Organisation
1			
2			
3			

Do you agree to participate in this interview? Yes □ No □

Could you please give your postal address e-mail address and phone number

Postal address:

Contact No:

Email address:

Can you recommend other qualified persons to participate in this interview?

Yes □ No □

If yes, please give the information below:

1- Name: Surname:

Position and organisation: Contact No:

Address:

2- Name: Surname:

Position and organisation: Contact No:

Address:

إستمارة المعلومات الشخصية

تملأ هذه الإستمارة من قبل المشاركين للعودة إليها لاحقا ، إذا لزم الأمر.

الاسم الأول	(اللقب) اسم العائلة	التاريخ

التعليم والمؤهلات :

حاصل على درجة البكالوريوس □ درجة الماجستير □ دكتوراه □

المجال:

الوظيفة الحالية:

يرجى ذكر بإيجاز الأعمال السابقة والخبرات والمسؤوليات فيما يتعلق بتكنولوجيا المعلومات والاتصالات وتطوير الخدمات الإلكترونية (اذكر رقم سنوات في كل موقع)

	المنصب	عدد السنوات	المنظمة
1			
2			
3			

هل أنت على استعداد للمشاركة في هذا البحث ، لتحديد العوائق والدوافع لتطوير الخدمات الإلكترونية من خلال المشاركة في هذه المقابلة الشخصية؟

نعم □ لا □

إذا كانت الإجابة بنعم ، يرجى تقديم عنوانك البريدي وعنوان البريد الإلكتروني ورقم الهاتف للمراسلات في المستقبل

العنوان البريدى:

رقم الهاتف:

البريد الإلكتروني:

هل تستطيع أن توصي أشخاص مؤهلين آخرين للمشاركة في هذه المقابلة؟ نعم □ لا □

إذا كانت الإجابة بنعم ، يرجى تقديم المعلومات التالية :

1- الإسم: اللقب: الوظيفة: المنظمة:

رقم الهاتف: العنوان:

2- الإسم: اللقب: الوظيفة: المنظمة:

رقم الهاتف: العنوان: